A DISSERTATION ON

A CORRELATIVE STUDY OF VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS

Dissertation submitted
in partial fulfilment of the regulations
for the award of the degree of

M.S.DEGREE BRANCH – I

GENERAL SURGERY

Of

THE TAMILNADU

Dr. M.G.R. MEDICAL UNIVERSITY

ESIC MEDICAL COLLEGE & POSTGRADUATE INSTITUTE OF MEDICAL SCIENCES AND RESEARCH K.K. NAGAR, CHENNAI – 78.

APRIL 2014

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This is to certify that this dissertation **"A CORRELATIVE STUDY OF VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS"** submitted by **Dr.ALAGAR SAMY .R,** appearing for M.S. Degree Branch – I, **GENERAL SURGERY** examination in April 2014 is a bonafide record of work done by him under my direct guidance and supervision in partial fulfilment of the regulations of the Tamilnadu Dr.M.G.R Medical University, Chennai. I forward this to the Tamilnadu Dr.M.G.R Medical University, Chennai, Tamilnadu, India.

Professor & HOD
Dr.ANBAZHAKAN,
MS., FIAS., F.M.M.C.,
Guide
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Signature

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Co-Guide
Associate Professor
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Date :
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ENDORSEMENT BY THE DEAN

This is to certify that this dissertation **"A CORRELATIVE STUDY OF VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS"** submitted by **Dr.ALAGAR SAMY .R,** appearing for M.S. Degree Branch- I **GENERAL SURGERY** examination in April 2014 is a bonafide record of work done by him under my direct guidance and supervision in partial fulfilment of the regulations of the Tamilnadu Dr.M.G.R Medical University, Chennai. I forward this to the Tamilnadu Dr.M.G.R Medical University, Chennai, Tamilnadu, India.

DEAN
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DECLARATION BY THE CANDIDATE

I solemnly declare that this dissertation entitled "A**CORRELATIVE STUDY OF VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS"** was done by me at ESIC Medical college and PGIMSR, KKNAGAR, CHENNAI during 2011-2013 under the guidance and supervision of **Professor Dr.R.ANBAZHAKAN M.S., F.I.A.S., F.M.M.C.,** This dissertation is submitted to the Tamil Nadu Dr. M.G.R. Medical University towards the partial fulfilment of requirements for the award of M.S. Degree in GENERAL SURGERY (Branch-I)

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Place: **Chennai-78** **Dr. ALAGAR SAMY.R**

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ACKNOWLEDGEMENT

In the first place I would like to convey my gratitude to our Dean **Dr.SRIKUMARI DAMODARAM M.S., M.Ch (SGE)., M.A.M.S., F.A.C.S., F.I.C.S., F.M.M.C.,** for providing me unflinching encouragement and support.

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I am extremely thankful to **Dr. M.S.VISWANATHAN, M.S., M.Ch. & Dr. N.MURUGESAN M.S.,** Assistant Professors, Department of General Surgery for their valuable inputs and support.

Many thanks in particular to the **CHAIRMAN** and members of The **Intuitional Ethical Committee** for approving our Study and for their valuable suggestions. I thank the statistician **Dr.PETHURU M.D.,** for his guidance regarding the sample size and data analysis.

My sincere thanks to **all the patients** without whose co-operation this study would have not been possible and last, but not the least, I express gratitude to my parents whose blessings and constant encouragement have always been with me.

CONTENTS

CERTIFICATE OF APPROVAL

To

Dr. R. Alagarsamy
PG in Department of Surgery
ESI-PGIMSR, K.K.Nagar,
Chennai 600 078.

Dear Dr. R. Alagarsamy,

The Institutional Ethics committee of ESI-PGIMSR, reviewed and discussed your application for approval of the proposal entitled **"A correlative study of Venous Clinical Severity Score (VCSS), Venous Disability Score (VDS) and Venous Refluxgrading by Venous Doppler in Varicose Veins of Lower Limbs"** No.3/03102012.

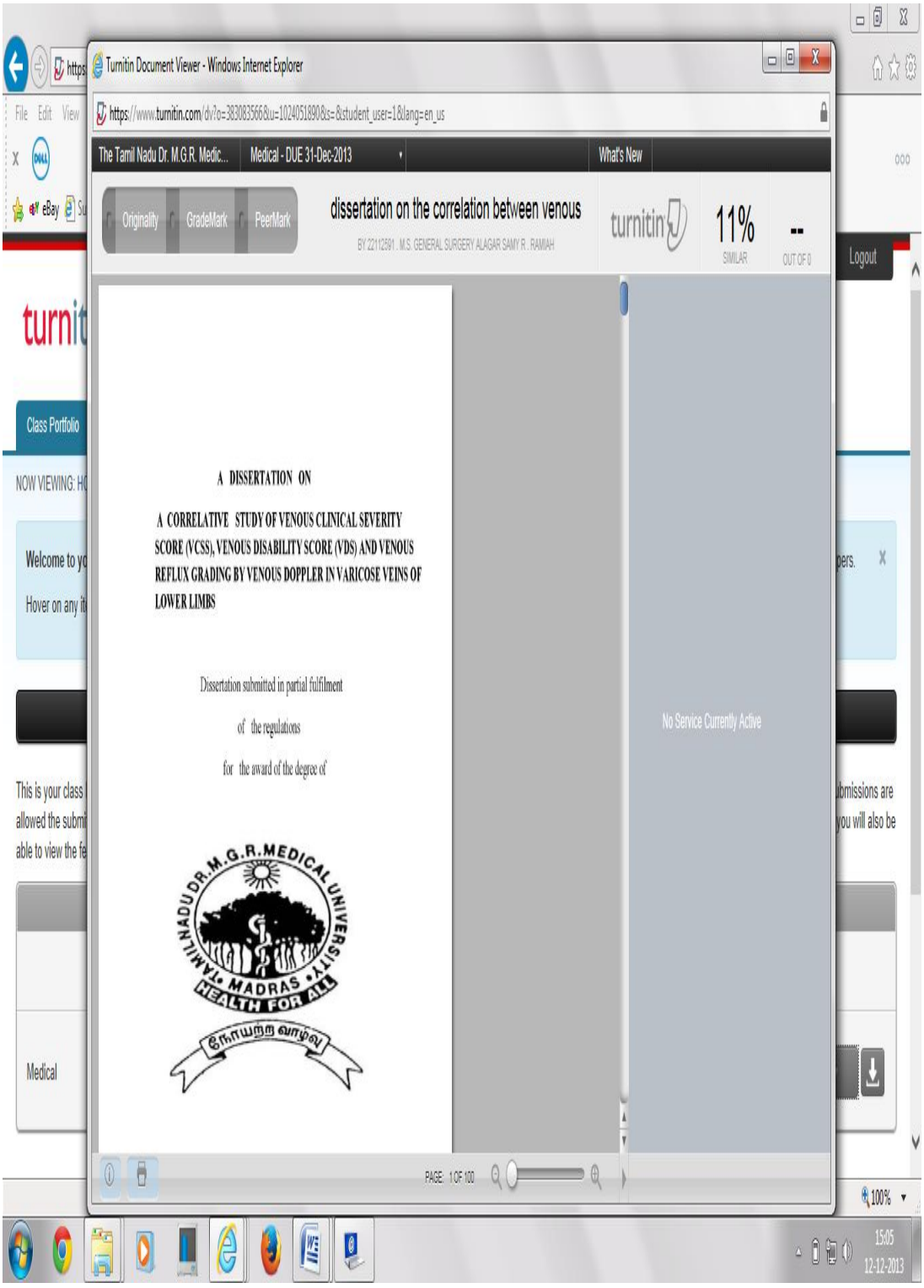
The following members of Ethics Committee were present in the meeting held on 03.10.2012 conducted at ESI-PGIMSR, Chennai 600 078.

1.	Dr. Saradha Suresh	-	Chairperson
2.	Dr. Kamalini Sridharan Prof. & HOD, Dept. Of Anesthesia, ESI-PGIMSR	-	Member Secretary
3.	Dr. Premila	-	EC Member
4.	Dr.N. Krishnan	-	EC Member
5.	Dr.K.S. Vijaya Raghavan	-	EC Member
6.	Dr.T.S. Swaminathan	-	EC Member
7.	Dr.C.V. Aravindan	-	EC Member
8.	Dr.S. Dhanalakshmi	-	EC Member
9.	Dr.B.S. Ayyappan	-	EC Member
10.	Dr.A. Sundaram	-	EC Member
11.	Dr.O.L. Naganath Babu	-	EC Member
12.	Sister Lalitha Teresa	-	EC Member

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee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ABBREVIATIONS

LSV	-	Long saphenous vein
SFJ	-	Saphenofemoral Junction
ABPI	-	Ankle Brachial Pressure Index
HHD	-	Hand Held Doppler
CEAP	-	Clinical, Etiopathological, Anatomical, Pathology
EVLA	-	Endovenous laser ablation
Hr	-	Hour
IVC	-	Inferior vena cava
LSV	-	Long saphenous vein
RBC	-	Red blood cell
RFA	-	Radiofrequency ablation
SEC	-	Seconds
SFJ	-	Sapheno femoral junction
SPJ	-	Saphenop opliteal junction
SSV	-	Short saphenous vein
SYN	-	Synonym
USG	-	Ultrasonography
VFI	-	Venous filling index
WKS	-	Weeks
CVI	-	Chronic venous insufficiency
DVT	-	Deep vein thrombosis

CLINICAL EXAMINATION PROFORMA

NAME :

AGE :

SEX :

ESI NO:

Date of examination:

- Address and contact number:
- Occupation- a) &b)whether it involves continuous standing – c)if yes, how many hours per day &for how long(months/years)
- Presenting complaints with duration
  [Asymptomatic, Pain, Itching, Swelling of legs, Discolouration of skin of lower limbs, Ulceration of legs, Any swelling in the abdomen]
- Personal history: in women previous obstetric history (any H/o of swelling of legs during previous pregnancy) any h/o oral contraceptive pills usage .H/o smoking/Alcohol intake
- Family history – Similar Illness in: any members of the family.

CLINICAL EXAMINATION

INSPECTION :

1. varicose veins (LSS or SSS)
2.swelling-localised or generalised

- Skin over the limb
  colour, texture,edema,eczema,pigmentation & ulceration (size, site surface, scar)
- Signs of ischemia (cold clammy skin, loss of hair, thinning skin, brittle nails, marked pallor, purple blue cyanosed, ulceration of digits, wasting of muscles)

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PALPATION:

- Temperature
- Tenderness
- Brodie Trendelenberg test 1& 2
- Multiple Tourniquet test
- Perthes test
- Modified Perthes test
- Schwartz test
- Pratt's test
- Morrissey's test
- Fegan's test
- Percussion
- Auscultation
- Other Systems examination

VCSS QUESTIONNAIRE

1) DO YOU HAVE PAIN Y N R L

IN THE LEGS ?

IF YES, WHERE DO YOU BELONG IN THE FOLLOWING CATEGORY?

1A)Occasional ,not restricting activity Y N

1 a)no analgesics Y N

2B)Daily, not able to perform occupational activities Y N

2b)occasional analgesics(<3/7 days/week) Y N

3C)Not able to perform day to day activity daily Y N

3c)Regular use of analgesics(7/7days in a week) Y N

2)ANY DILATED VEINS Y N R L IN THE LEGS?

IF YES, WHERE DOES THIS PATIENT BELONG IN THE FOLLOWINGCATEGORY ?

Few, isolated varices Y N

Multiple (LSV) or (SSV) calf varices only Y N Score

Extensive (LSV,SSV) varices of calf and Thigh Y N

3)ANY SWELLING OF Y N R L THE LEGS?

3a) IF YES WHEN ?

3 i)Evening only Y N

3ii)Evening &After noon Y N

3iii)Whole day Y N

3 b) WHERE? score

3i)at ankle Y N

3ii)above the ankle(Lower Y N 1/3rd of ankle)

3iii)above the ankle(upper Y N 1/3rd ofankle

requires activity change & elevation

4) ANY SKIN CHANGES IN THE LEGS Y N R L

IF YES WHAT KIND OF ??

4A) DISCOLOURATION OF SKIN

i)DIFFUSE LIMITED Y N

ii) DIFFUSE LOWER 1\3RD Y N

iii)WIDER UPPER 1\3RD y N

4B)CELLULITIS OF LEG

I)AROUND THE ULCER Y N

Score II)LOWER1\3RD Y N LEG

III) UPPER y N 1\3RD LEG WITH DISCHARGE

4 C) INDURATION OF LEGS

I)ONE SIDE(MEDIAL OR Y N LATERAL SIDE) OF ANKLE

II)BOTH SIDES OF ANKLE Y N

III)ENTIRE LOWER 1\3RD LEG Y N

5)ANY LEG R L Y N ULCERS?

IF YES

5 A) NUMBER OF LEG ULCERS ?

i)1 Y N

ii)2 Y N

iii)>2 Y N

5B)DURATION OF LEG ULCERS

I)< Y N 3months

II)3 months- 1 yr Y N score

III)>1 yr Y N

5 C) SIZE OF LEG ULCERS

I)< 2cms Y N

II)2cms -6cms Y N

III)>6cms Y N

VDS QUESTIONNAIRE

1) DO YOU FEEL ANY PAIN OR HEAVINESS IN YOUR LIMBS?
YES NO RIGHT LEFT

2) IF YES, ARE YOU ABLE TO CARRY OUT YOUR WORK NORMALLY AS BEFORE? YES NO

3) ARE YOU ABLE TO CARRY OUT YOUR WORK WITH OR WITH OUT CREPE BANDAGE ? YES NO

SCORE :

a) VENOUS CLINICAL SEVERITY SCORE (VCSS) - out of 30

b) VENOUS DISABILITY SCORE(VDS) - out of 3

TOTAL SCORE-

CATEGORY OF THE PATIENT ACCORDING TO VCSSVENOUS REFLUX GRADING

1) Mild (0-10)-
   1) Mild reflux
2) Moderate (11-20)-(VS)
   2) Moderate reflux
3) Severe (21-30)-
   3) Severe reflux

CATEGORY OF THE PATIENT ACCORDING TO VDSVENOUS REFLUX GRADING

0 / 1 / 2 / 3 (VS)

1) Mild reflux 2) Moderate reflux

3) Severe reflux

INFORMATION SHEET AND CONSENT FORM

Informed consent for patient who are attending surgical OPD in ESI-PGIMSR hospital, and whom we are inviting to participate in research titled "A CORRELATIVE STUDY OF VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS AT ESI-PGIMSR, KK Nagar, Chennai, 2012-13". Dr.R.ALAGARSAMY, M.S. (General surgery) post graduate is the principal investigator of this research under ESI-PGIMSR, Chennai.

INTRODUCTION

We, Dr.R.ALAGAR SAMY, IIIYr, GeneralSurgery pgGuidedby Dr.R.ANBAZHAKAN , MS,FAIS

Professor & HOD Of Surgery& Dr. UDAY SHAMRAO KUMBHAR ,MS, Associate Professor Of Surgery, are going to give you information and invite you to be part of this research. Before you decide, you can talk to anyone of us you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask us to stop as we go through the information and we will take time to explain. If you have questions later, you can ask us.

Purpose of the research

We will be studying whether there is correlation between clinical severity score (VCSS), venous disability score (VDS) and venous reflux grading (VRS)by venous Doppler in varicose veins of lower limbs

Type of Research

This research will involve your participation in an observational manner, with assured privacy and confidentiality.

Right to Refuse or Withdraw

Your participation is strictly voluntary. Refusal to participate will not affect subsequent services to you

Procedures

If you give consent to participate in this study, we will ask you questions regarding your illness. A history will be taken recording symptoms, duration of disease, occupation. The degree of disability is assessed by questionnaire. The site of varicose vein, system of involvement (LSV or SSV or Perforator incompetence), any complications will be assessed by clinical examination.Abdominal and pelvic examination will be done to rule out abdominal tumors, other causes of raised intra abdominal tension .Cardio vascular system & peripheral arterial pulses will be carefully examined to exclude arterial disease associated with varicose vein. Then you will undergo standard colour Doppler ultra sonogram to find out system of involvement [LSV or SSV] and to rule out DVT. If LSV is involved further grading of venous reflux at sapheno-femoral junction of involved limb will be done.

By using colour Doppler, sapheno-popliteal junction & deep venous system will be assessed. In Doppler studies, you will be examined in

1. In standing position only 2. During the valsalva maneuver.

Valsalva maneuver: (to test the competency of proximal deep veins, SFJ). Reflux is elicited at above sites during this maneuver in the standing positions.

3.Augmentation of venous return of lower limbs by calf compression in prone position .

Confidentiality will be maintained throughout the study.

Risks

This study is purely beneficial to you with no expected risks

Benefits

Your participation will help us improve the management of varicose veins of lower limbs .A positive correlation between venous severity scores and venous reflux by Doppler examination &Reduction in Venous severity score post- operatively is a reliable indicator of the effectiveness of surgery

Possible long term outcome – The scoring system may assist us in determining the type of management.You will not be provided any incentive or travelling allowances to take part in the research.

Confidentiality

All information you provide will be kept confidential. Your name will not be used in any way.

Whom to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact:,Dr.R.Alagar Samy, IIIYr, General

Surgery pg ph no: 9790435880,department of general surgery , ESI-PGMSR , K.K.NAGAR Chennai- 78.

This proposal has been reviewed and approved by Institute Ethics Committee, which is a committee whose task it is to make sure that research participants are protected from harm.

If you have any questions regarding any part of the study, feel free to ask.

CONSENT FORM

I have read the information in the consent form (or it has been read to me.) I was free to ask any questions and they have been answered. I understand what is being requested of me as a participant in this study. I have been given satisfactory answers to my questions. I certify that I am more than 18 years of age. I freely consent to participate in the study called "A CORRELATIVE STUDY OF VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER IN VARICOSE VEINS OF LOWER LIMBS AT ESI-PGIMSR, KK Nagar, Chennai, 2012-13".

I have read and understood this consent form and the information provided to me. I have been explained about the nature of the study. My rights and responsibilities have been explained by the investigator I agree to cooperate with the investigator. Currently I am not participating in any research study. I hereby give permission to the investigators to release the information obtained from me as a result of participation in the study to the regulatory authorities, government agency, ethics committee. I understand that they may inspect my original records.

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My records will be kept confidential I have decided to participate in the study. As I was not able to read, the consent form has been read out to me by the investigator and all my questions have been answered and i give my consent with my free will.

_____

Name of Participant

_____ _____

Sign of Participant Date

_____ _____

Name of Investigator (Signed) Date

ஆய்வு பற்றிய தகவல் படிவம் மற்றும் ஆய்வில் பங்கேற்பதற்கான ஒப்புகல் படிவம்

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மருத்துவ பட்ட மேற்படிப்பு ஆராய்ச்சி நிறுவனம்,
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சென்னை- 600 078.

(2012-2013)

இந்தப் படிவம் சென்னை க.க. நகரில் உள்ள தொழிலாளர் நல காப்பீட்டு மருத்துவமனை மற்றும் மருத்துவ பட்ட மேற்படிப்பு ஆராய்ச்சி நிறுவனத்தில் பொது அறுவை சிகிச்சைத் துறையின் வெளி மற்றும் உள் நோயாளி பிரிவுகளில் ஆலோசனை பெற வரும் நோயாளிகளின் கால்களில் உள்ள "நரம்பு சுருட்டை" என்ற வியாதியினை பரிசோதனை மூலம் கண்டறியப்படும் VCSS & VDS என்ற அளிவீடுகளுக்கும், டாப்ளர் என்ற பரிசோதனையின் மூலம் கண்டறியப்படும் அளவீடுகளுக்கும் இடையே உள்ள ஒற்றுமையை கண்டறிய உதவும் இந்த ஆய்வை தொழிலாளர் நல காப்பீட்டு மருத்துவமனை மற்றும் ஆராய்ச்சி நிறுவனத்தில் பொது அறுவை சிகிச்சைத் துறையில் பட்ட மேற்படிப்பு பயிலும் மரு.இரா.அழகர்சாமி, முதன்மை ஆராய்ச்சியாளராக இந்த ஆய்வை நடத்துகின்றார். பேரா.மரு.அன்பழகன், துறைத்தலைவர் (வழிகாட்டி) மரு.உதய் ஷாம்ரோ கும்பார் (துணை வழிகாட்டி) அவர்கள் வழிநடத்துகின்றனர்.

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இந்த ஆய்வில் தாங்கள் பங்கேற்பது முற்றிலும் உங்கள் மனமார்ந்த விருப்பம். இந்த ஆய்வில் பங்கேற்க மறுப்பதினால் தங்களுக்கு மேற்கொண்டு சிடைக்கும் சிகிச்சை மற்றும் சேவையில் எவ்வித மாற்றமும் இருக்காது.

நடைமுறைகள்

நீங்கள் இந்த ஆய்வில் பங்கேற்க விருப்பம் தெரிவித்தால் தங்கள் கால்களில் உள்ள நரம்பு சுருட்டை வியாதிக்கான காரணங்களைக் கேட்டு அறிவோம். அதன்பிறகு சில பரிசோதனைகளை செய்து பாதிக்கப்பட்டிருப்பதன் தீவிரத்தன்மையைக் கண்டறிய உதவும் அளவீடுகளைக் குறித்துக்கொள்வோம். அதன்பிறகு டாப்ளர் என்ற ஸ்கேன் தங்கள் கால்களில் எடுக்கப்பட்டு இரத்தக்குழாயின் வால்வு பலவீனத்தன்மையை மதிப்பீடு செய்துகொள்வோம். பரிசோதனையின் முடிவில் இரு அளவீடுகளுக்கும் இடையே ஏதேனும் ஒற்றுமை உள்ளதா என்பதைக் கண்டறிவோம்.

அபாயங்கள் என்ன

இந்த ஆய்வின் மூலம் உங்களுக்கு எந்த பாதிப்பும் ஏற்பட வாய்ப்பில்லை. மாறாக நன்மை பயக்கும் ஒன்றாக இருக்கும்.

நன்மைகள்

தாங்கள் இந்த ஆய்விற்கு உட்படுவதால் கால்களில் உள்ள நரம்பு சுருட்டை வியாதியில் பரிசோதனை மூலம் கண்டறியப்படும் அளவீடுகளுக்கும், டாப்ளர் என்பதான ஸ்கேன் மூலம் கண்டறியப்படும் அளவீடுகளுக்கும் உள்ள ஒற்றுமையை கண்டறியப்படுவதன் மூலம் எங்களால் (அறுவை

சிகிச்சை நிபுணர்கள்) அதற்கு தருந்த அளவீடுகளின் மூலம் எந்த வகையான சிகிச்சை அளிக்கலாம் என்பதைக் கண்டறிய வாய்ப்புள்ளது.

யாரை தொடர்புகொள்வது

உங்களுக்கு சந்தேகம் ஏதாவது இருந்தால் இப்போது அல்லது பின்னரும் கேட்கலாம். நீங்கள் இந்த தொழிலாளர் நல காப்பீட்டு மருத்துவமனை மற்றும் மருத்துவ பட்டமேற்படிப்பு ஆராய்ச்சி நிறுவனத்தில் பொது அறுவை சிகிச்சைத் துறையில் முதுகலை பயிலும் மரு.இரா.அழகர்சாமி, நேரடியாகவோ அல்லது செல்: 9790435880 என்ற எண்ணில் தொடர்பு கொள்ளலாம்.

தகவல் படிவத்தில் இருந்த தகவல்களை படித்து அறிந்தேன்/ படிக்க கேட்டறிந்தேன். என்னுடைய சந்தேகங்களை தீர்த்துக்கொள்ள வாய்ப்ளிக்கப்பட்டது. எனக்கு 18வது வயதிற்கு மேல் ஆவதால் இந்த ஆய்வில் கலந்துகொள்ள எவ்வித தயக்கமும், வற்புறுத்தலும் இல்லாமல் முழுமனதுடன் ஒப்புதல் அளிக்கிறேன்.

PRADEEP
பங்கேற்பாளரின் பெயர்

DR.R.ALAGAR SAMY
ஆய்வு மேற்கொள்பவரின் பெயர்

பங்கேற்பாளரின் கையொப்பம்

ஆய்வு மேற்கொள்பவரின் கையொப்பம்

தேதி: 01-07-2013

தேதி: 01-07-2013

ABSTRACT

The study on correlation between **VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER** in Varicose veins of lower limbs

Abstract: The study was aimed at studying the correlation between **VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER** in Varicose veins of lower limbs.This study was conducted in the Department of General surgery, ESI-PGIMSR, over a period of 18months. The study group consisted of 75 patients between 24 to 75yrs (mean 44.41 ± 12.967), inclusive of both males(n=70) and females(n=5). They were assessed for severity of varicose veins by documenting a detailed history, clinical examination findings and imaging studies on a pre structured proforma.

It was found that majority of the patients were ≤ 60yrs and the right lower limb was predominantly affected in both sexes. Using the VCSS system, 66.7%(n=50) cases had mild disease, 33.3%(n=25) cases had moderate disease and none had severe disease.

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In the present study, as per the VDS system, majority of the patients(n=71, 94.7%) had grade II disability. And 76%(n=57) of the patients had severe grade of venous reflux i.e. venous reflux duration >1second.A statistically significant correlation was found between clinical manifestations of varicose veins and the degree of reflux in the veins, assessed using the VCSS and VRS system, respectively.

Key words: VCSS, VDS, VRS , proforma, venous reflux

Ref: Venous Clinical Severity Score and quality-of-life assessment tools: application to vein practice. M A Vasquez, C E Munschauer ; Phlebology. 2008 ;23 (6):259-75

INTRODUCTION

Varicose veins of the lower limbs is a common clinical condition[1] that we encounter in the surgical clinics of our hospital – the ESIC Medical college and PGIMSR [statistics follows].The term varicose is derived from the latin word "varix" meaning bent and refers to dilated, tortuous & lengthened veins of lower limbs[2]. Varicose veins of lower limb occur due to loss of valvular efficiency[3] which is a product of the resultant venous hypertension in standing position. Most commonly occurs in females[3] compared to males according to western studies. In contrast to western studies, males are more affected than females in our hospital as per statistics**.**

INCIDENCE OF VARICOSE VEINS AT ESICM & PGIMSR, CHENNAI - 2011.

Total number of varicose veins in the outpatients:

431 (**Male**-388, **Female** - 43)

Total number of varicose veins in the inpatients :

110 (**Male**-103, **Female**-7)

Total number of varicose ulcer in the OP&I :

45 (**Male**-42, **Female**-3)

Total number of patients underwent surgery :

65 (**Male**-61, **Female**-4)

(Trendelenberg ligation & stripping)

The anatomy of the arterial system is relatively constant [4] but that of venous system is subject to individual variation. In the lower limb superficial veins carry only about 10% [6]of blood where as remaining passes via deep veins. Superficial veins lie superficial to muscle and fascia of the limb[5]. All veins contain valves every few centimetre, which ensures that blood flows towards the heart.

THE VENOUS SYSTEM:[5]

For practical purpose the veins may be divided into 3 main systems.

a. The superficial system

b. The perforator system

c. The deep system

The superficial veins are found under the skin in the subcutaneous tissue. The deep venous system accompanies the arteries. Valves are present in both systems, but are more numerous in the deep veins.

The superficial system

The superficial system of the leg consists of two major veins and their tributaries, namely the long and short saphenous veins. They lie superficial to deep fascia.

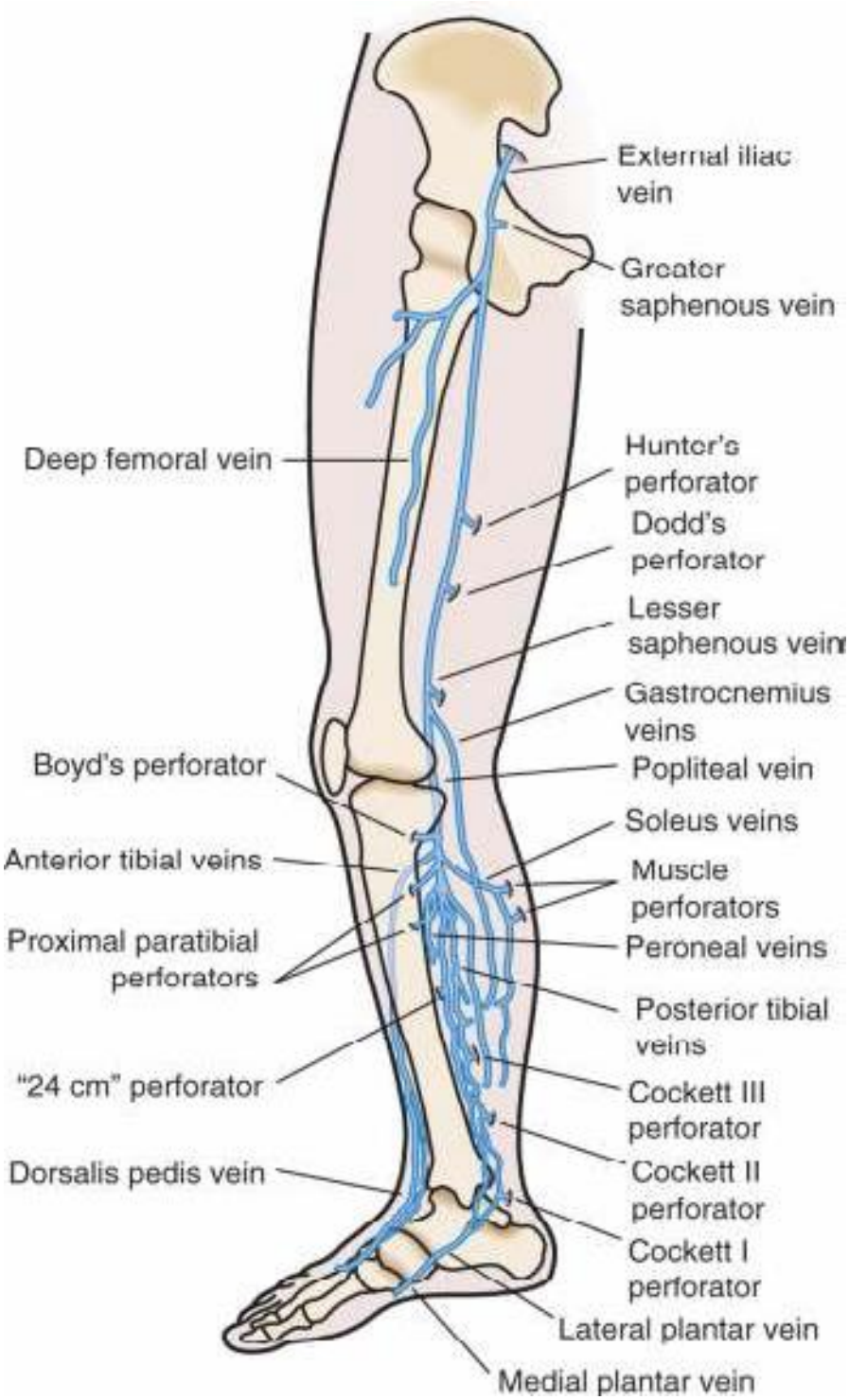

FIGURE - 1

Superficial veins and Perforating veins of the lower limb

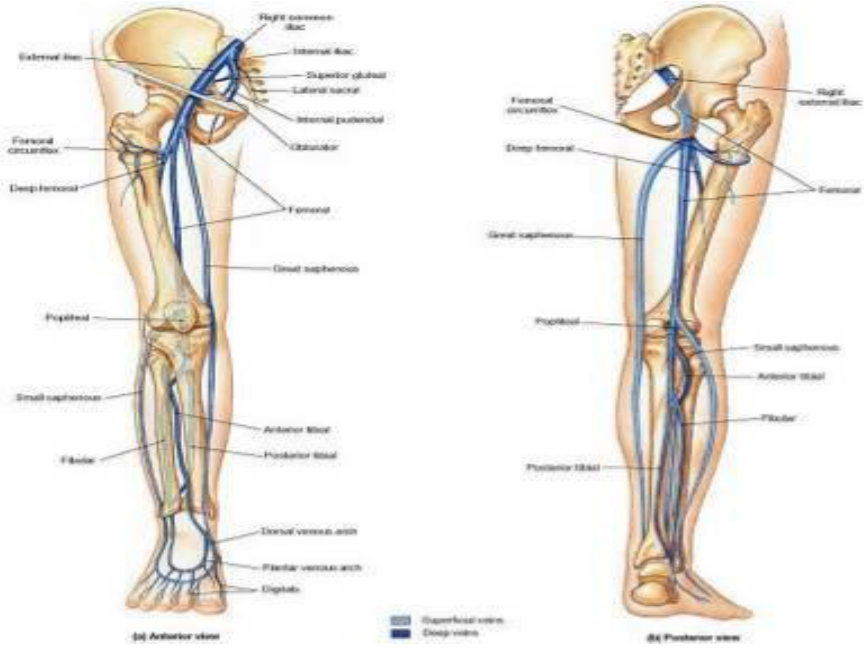

FIGURE – 2

Deep veins of lower limb

PHYSIOLOGY OF THE VEINS OF LOWER LIMB

As might be expected the leg veins are thicker walled[7] and possess a greater development of adventitial connective tissue[8] than elsewhere. Such structural modifications seem to be related to the gravitational stresses which these leg veins have to endure.

1. The superficial veins have smooth muscle in their walls and the deep veins do not have making them more or less passive reservoir of blood[7]. Whereas superficial veins contract in response to direct stimuli and other stimulus like cold, warm, and drugs.

2. The physiology of venous return from the leg is quite different when lying prone and when standing up. By the time it emerges from the capillaries it is at low pressure (about 20mmHg)[9], but this is enough for the blood to return to the heart.

Following factors help in venous return[9]

1. Negative pressure in the thorax.
2. The calf muscle pump.
3. Vis - a –tergo
4. Competent valves.

PATHOLOGY OF VARICOSE VEINS[11]

It typically consists of a retrograde circuit having 4 components.

1. A source of out flow from deep to superficial veins at high level.

2. A pathway of incompetence running down the limb.

3. Re-entry points where superficial down flow joins the deep veins.

4. A return pathway provided by the deep veins and the musculo venous pumping mechanisms.

Venous reflux[9] appears to be most important factor in majority of CVI (chronic venous insufficiency) patients. These changes are vital in the "gaiter areas"[9] around the ankles due to sparse soft tissue support to withstand elevated venous pressures and common site for affected perforator veins.

The most common abnormality in patients with CVI is incompetence of the popliteal or tibial veins[5]; 50-60%[9] of patients have incompetent perforators.

The most frequent complaints for which patient seeks help are :

1. Disfigurement9: (Prominent veins in the limb) those who present with thiscomplaint have a variety of symptoms ranging from gross unsightly multiple varicosities to an engorged small tributary. These dilated veins may or may not be associated with complications.

2. Pain in the limb[9]: The commonest presenting complaint in our country seems to be ache or pain in the lower limb increasing as the time goes on. The pain is aggravated by prolonged standing and exercise, relived while lying down .

Complications[9]:

Patient may present with the following complications of the disease.

a) Haemorrhage

b) Thrombophlebitis

c) Eczema and Dermatitis

d) Other uncommon complications like

- Calcification of the vein
- Periosteitis.

- Equinus deformity
- Saphena varix.
- Atrophie Blanche.
- Lipodermatosclerosis.
- Corona phlebectatica.

CLASSIFICATION OF CHRONIC VENOUS DISEASE (C,E,A,P)[9]

Clinical classification[9]

C0 – No visible or palpable signs of venous disease

C1 - Telangiectasies or reticular veins.

C2 - Varicose veins; distinguished from reticular veins by a diameter of 3 mm or more.

C3 - Edema

C4 - Changes in skin and subcutaneous tissue.

C4 a) - Pigmentation or eczema.

C4 b) - Lipodermatosclerosis or atrophie blanche.

C5 - Healed venous ulcer.

C6 - Active venous ulcer.

Etiologic Classification[9]

Congenital (EC) Cause of the chronic venous disease present since birth Primary (EP) Chronic venous disease of undetermined cause Secondary (ES) Chronic venous disease with an associated known cause.

Anatomic Classification (AS, AD, or AP)[9]

The anatomic site(s) of the venous disease should be described as superficial (AS), deep (AD), or perforating (AP) vein(s).

Patho physiologic Classification[9]

Reflux (PR)

Obstruction (PO)

Reflux and obstruction (PR, O)

VENOUS CLINICAL SEVERITY SCORE(VCSS)

Attribute	Absent=0	Mild 1	Moderate 2	Severe 3
Pain	None	Occasional ,not restricting activity, no analgesics	Daily,moderate activity limitation occasional analgesics	Severe Limitation of activity daily,regular use of analgesics
Varicose veins	None	Few, isolated varices	Multiple (LSV) or (SSV) calf varices only	Extensive (LSV,SSV) varices of calf and thigh
Venous edema	None	Evening only at ankle	Evening &After noon above the ankle	Whole day above the ankle ,requires activity change & elevation

VCSS

Pigmentation of skin	None	Diffuse, limited area old pigment (brown)	Diffuse most of the gaiter region, lower 1/3 of leg recent pigment (purple)	Wider upper 1\3 of leg, recent pigment (purple)
Inflammation	None	Cellulitis mild around ulcer margin	Cellulitis Moderate in gaiter region, lower 3rd of leg	Cellulitis Severe above the lower 3rd of leg or eczema
Induration	None	Focal < 5cm,circumall eolar region	Medial or lateral, <1/3 of leg	Entire lower 1/3rd of leg
No of active ulcer	0	1	2	More than 2
Size of active ulcer	0	Less than 2 cm	2-6cms	More than 6cms
Duration of active ulcer	None	< 3M	3m to 1 year	More than 1year
Compressive therapy	None	Occasional use	Intermittent	Regularly use

VENOUS DISABILITY SCORE(VDS)

SCORE DEFINITION

- 0 Asymptomatic
- 1 Symptomatic, but able to carry out usual activities* with-out compressive therapy
- 2 Able to carry out usual activities* only with compressive therapy and/or limb elevation
- 3 Unable to carry out usual activities* even with compressive therapy and/or limb elevation

{Usual activities = patients all activities before the onset of disability due to venous disease}

Grading of venous reflux (VRS)

By noninvasive colour doppler imaging

Grade		Reflux duration
Mild reflux	GRADE 1	Reflux duration of <0.5 sec,rapid closure of venous valves
Moderate reflux	GRADE 2	Reflux duration of 0.5 -1sec mild to moderate retrograde flow
Significant reflux	GRADE 3	Reflux duration of >1sec ,large volume of retrograde flow
NORMAL VALVE FUNCTION		No reflux,rapid closure of venous valves

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METHOD OF DOPPLER EXAMINATION AND SONOGRAPHIC ANATOMY[14-18]

The choice of transducer for evaluating the lower extremity veins depends on the patient's body habitus and the depth of the vessel to be studied. The examination is preferentially performed with a high-resolution 5- to 7.5-MHz [14]linear array transducer.

For very superficial veins (ie, the greater or small saphenous veins), a 10-MHz transducer may be optimal. For large patients a lower-frequency[14] (2.5- or 3.5-MHz) curvilinear transducer may be necessary.

Briefly, the great saphenous vein (GSV) joins the common femoral vein (CFV)[15] just superior to its bifurcation. It travels medially in the thigh and calf extending inferiorly to the level of the foot. It measures about 3 to 5[15] mm in diameter at the level of the saphenofemoral junction, tapering to about 1 to 3 mm in diameterat the level of the ankle. Measurement of the GSV is important before harvesting for autologous vein grafting. The small saphenous vein (SSV) (formerly called the ‘‘lesser saphenous vein’’) extends from the ankle along the posterior aspect of the calf to insert at variable levels into the posterior proximal or mid popliteal vein (PV). The diameter of the SSV tapers from 2 to 4 mm proximally to about 1 to 2 mm distally. Both the GSV and SSV may become enlarged and varicose in patients who have venous insufficiency or congestive heart failure. Thrombosis of these vessels may occur with ensuing superficial thrombophlebitis.

The deep venous system[16] includes the CFV, the deep femoral or profunda femoris vein, the femoral vein (FV) (previously called the ‘‘superficial femoral vein’’), and the PV as well as the paired anterior and posterior tibial veins and the peroneal veins. The CFV is the continuation of the external iliac vein and extends from the level of the inguinal ligament to the level of the bifurcation into the FV and profunda femoris

vein. The profunda femoris vein lies medial to the accompanying artery and can be evaluated only in its most proximal portion.

The CFV lies medial to the accompanying artery. The FV travels medial to the femoral artery through the adductor canal in the distal thigh. To avoid confusion among clinicians, the term ‘‘femoral vein’’ (FV) should be used instead of the previously designated term ‘‘superficial femoral vein’’ to describe that part of the deep venous system caudal to the bifurcation of the CFV. (In a survey performed by Bundens and colleagues, more than 70% [17]of surveyed internists regarded the ‘‘superficial femoral vein’’ as part of the superficial and not the deep venous system and thus were under the assumption that superficial femoral vein thrombosis did not require treatment.) The PV is the continuation of the FV after its exit from the adductor canal in the posterior distal thigh. The PV is located anterior to its accompanying artery and courses through the popliteal space into the proximal calf.

In addition, the muscles of the calf are drained by gastrocnemius and soleus veins[18], which do not have accompanying arteries. A complete examination includes evaluation of the full length of the CFV and saphenofemoral junction, the proximal portion of the deep femoral vein, the FV, and the PV.

In obese patients compression in the adductor canal may be difficult. Sometimes a two-hand technique, pushing the leg into the transducer with the free hand from behind, may help achieve adequate compression[17].

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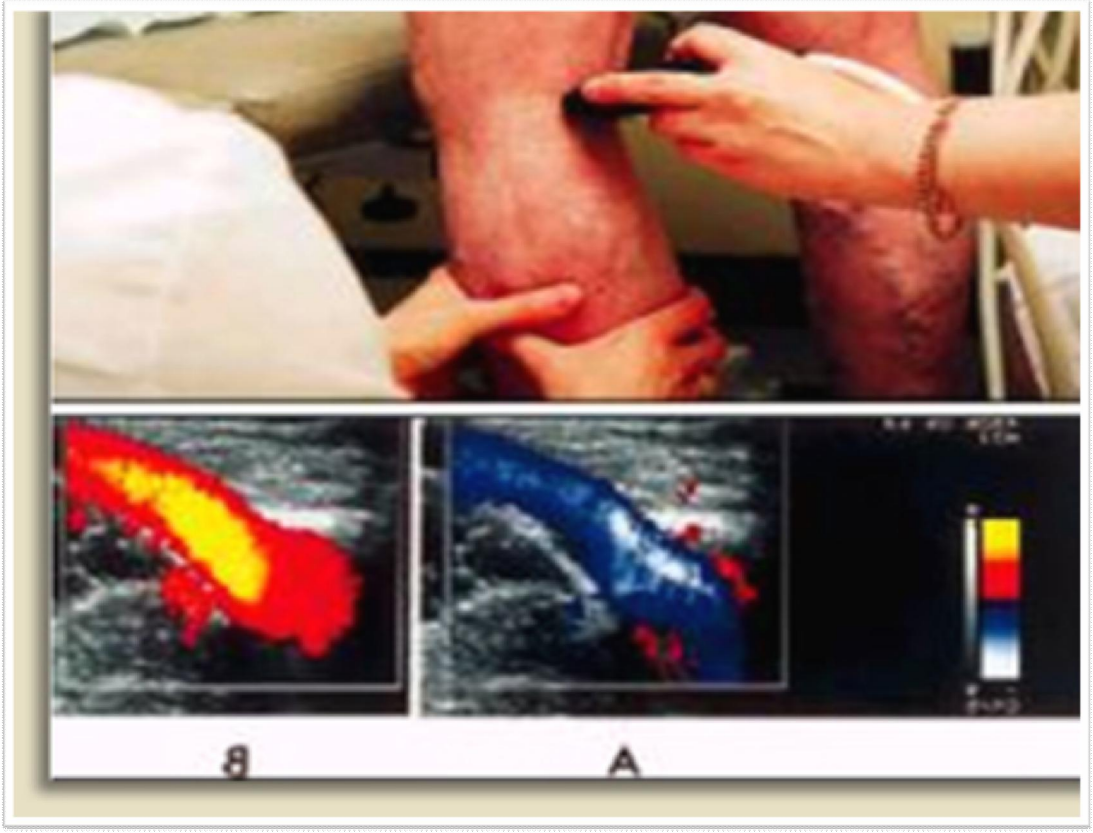
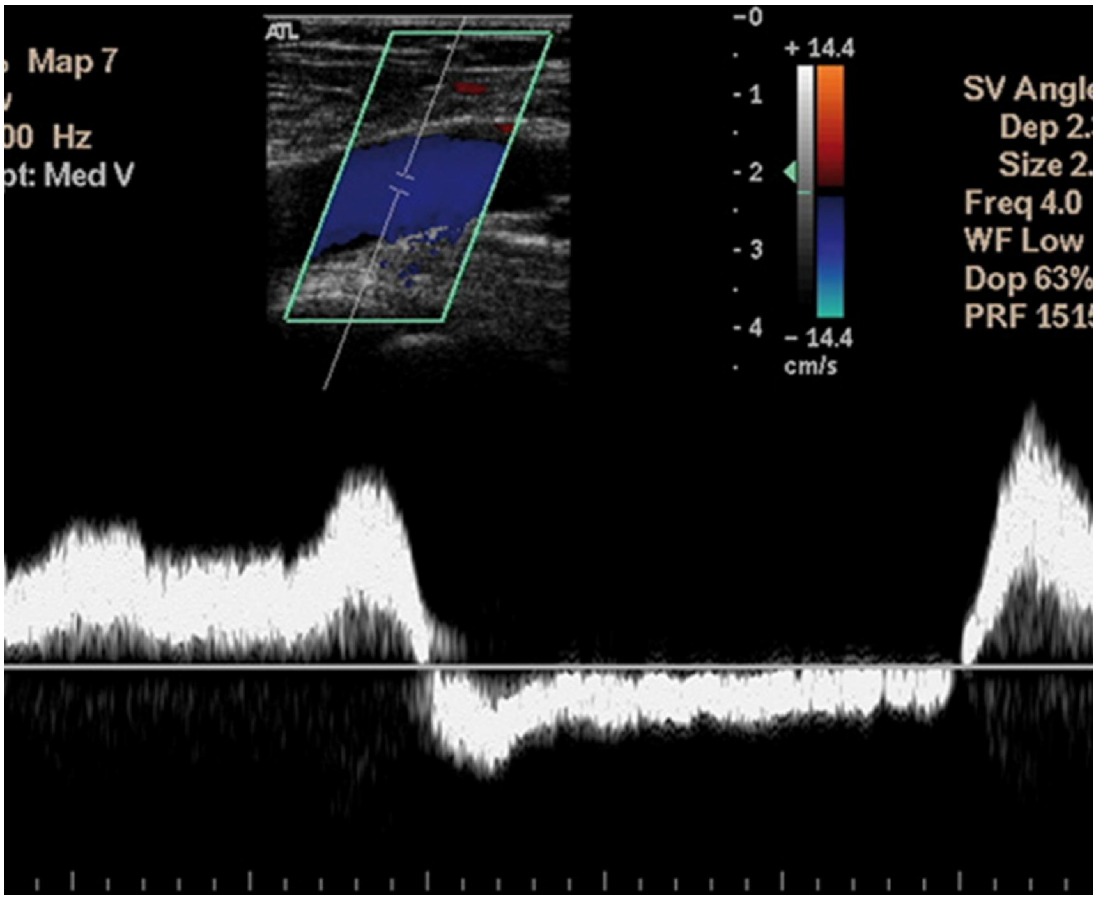


DOPPLER EXAMINATION IN A STANDING POSITION



DOPPLER IMAGING OF LOWER LIMB VEINS

Method of examination[17]

Designing a treatment plan for a patient who has varicose veins requires identification of the highest as well as the lowest point of reflux. In addition, the source of reflux must be identified for every varicosity. This identification is accomplished by a combination of visual inspection and Doppler USG. Because the examination can be time consuming, it may be helpful to have a walker, table, or counter to help support the patient as well as a stool for the examiner. Either colour or pulse Doppler can be used, and three different methods can be attempted to elicit reflux:

1. Augmentation[17]**:** The leg is squeezed from below, directing flow toward the heart. If blood flows back toward the feet for more than half seconds Following augmentation, the examination is positive for reflux, although some examiners require a full second of reflux before considering the examination to be positive. Transient retrograde flow is normal and serves to push back the valve leaflets, causing them to close.

2. Valsalva maneuver[17]**:** Reflux can be assessed in the thigh after the Valsalva maneuver because the resultant increased intra-abdominal pressure causes retrograde flow through incompetent valves. Although this technique is sensitive, it works well only in the upper thigh. If the

terminal and/or subterminal valves in the GSV are competent, the Valsalva maneuver will not detect more distal points of reflux.

3. Direct or retrograde compression[17]: Direct compression above the point of Doppler interrogation propels blood toward the feet in the setting of an incompetent valve. Although it is easiest to assess for reflux in the longitudinal plane using colour Doppler or pulse Doppler interrogation, with experience the examination can be performed more efficiently in the transverse plane with colour Doppler while angling the transducer toward the head or feet.

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AIM OF THE STUDY

To find out the correlation between the venous clinical severity score, venous disability score with the grading of venous reflux by venous Doppler in varicose veins of lower limbs.

MATERIALS AND METHODS

After consulting with the statistician the sample size set was 75 Patients in the study as per the following calculation.

$$\text{SAMPLE SIZE} = \frac{2PQ\,(Z\alpha+Z\beta)^2}{(P1-P2)^2}$$

P = P1+P2\2 Q = 100 - P

Zα= 1.96 Zβ= 0.84

P1 = 100% P2 = 90%

SAMPLE SIZE = 75

INCLUSION CRITERIA

Patients who were attended surgical OPD with primary varicose veins diagnosed by history , clinical examination and imaging techniques.

EXCLUSION CRITERIA

- Pregnancy
- Intra abdominal tumors / Pelvic tumors
- Deep vein thrombosis
- Varicose vein with Peripheral arterial disease of lower limbs
- Isolated perforator incompetence
- Recurrent varicose veins after previous surgery(REVAS)

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METHODS

Both Venous clinical severity score [VCSS][9] &Venous disability score [VDS][9] were evaluated by *Questionnaire and Clinical examination.* The Noninvasive standard color Doppler examination[16] had performed for assessing the following parameters.

i) Grading of venous reflux at SFJ

ii) Competency of SPJ

iii) Patency and competency of deep venous system of lower limb.

In this study conducted at ESIC Medical college and PGIMSR, K.K. Nagar, Chennai for the period of one year and six months. After obtained informed consent, a total of 75 patients with primary varicose veins, from those who attended the surgical OP, were included. The history was taken recording symptoms, duration of disease and occupation.

The degree of disability was assessed by questionnaire. The site of varicose veins, system involved (LSV or SSV or Perforator incompetence) and if any associated complications were assessed by clinical examination.

Abdominal and pelvic examination were done to rule out abdominal tumors and other causes of raised intra abdominal pressure .Cardio vascular system and peripheral arterial pulses were carefully examined to exclude arterial disease associated with varicose vein.

The patients underwent standard color Doppler ultra sonogram to find out system of involvement [LSV or SSV]. In patients with LSV involvement further grading of venous reflux at sapheno-femoral junction was assessed. By using color Doppler, sapheno-popliteal junction and deep venous system were assessed for reflux and thrombosis respectively.

In Doppler studies, the patients were examined

A) In standing position

B) During the valsalva maneuver.

Valsalva maneuver[17]: (to test the competency of proximal deep veins, SFJ). Reflux was elicited at above sites during this maneuver in the standing position.

C) Augmentation[17] of venous return of lower limbs by calf compression in prone position was done. Augmentation by Calf compression : (for evaluating the venous competency). A gentle calf squeeze at the proximal veins of lower limb and the Foot squeeze at the level of calf veins of lower limb were done by means of Pneumatic calf cuff inflation and deflation. Then calf compression was abruptly removed

and looked for any backflow of blood from venous valves and if so the duration of venous reflux was noted.

In color Doppler examination, 5MHz and 10 MHz probe[15] were used for Quantifying the flow and obtaining hemodynamic information .Both were observed at rest, during valsalva maneuver and augmentation by calf compression.

In patients with venous incompetence during valsalva maneuver and augmentation, abnormal reflux[15] towards probe (red) at SFJ was seen. The reflux at the SPJ in the popliteal fossa and the patency of deep venous system were also assessed in prone or sitting position.

After history and clinical examination and color Doppler examination patients were categorized into three groups .The three groups were divided as mild ,moderate and severe according to the scores 0-9, 10-20, 21-30 respectively. After categorization correlation was done by Pearson method.

The venous refluxes 18 are of three types. They are grade I, grade II, and grade III according to the duration elicited by venous Doppler examination. Normally venous reflux is absent at SFJ. Presence of reflux is considered as abnormal. The duration of reflux was measured and graded as follows. The grade I –up to 0.5 second. Grade II – 0.5 to 1 second, Grade III – more than 1 second.

THE CORRELATION OF CLINICAL SCORING (VCSS, VDS) versus VRS BY DOPPLER IMAGING

VENOUS DISABILITY SCORE
VDS- 3 POINTS

+

CLINICAL SEVERITY SCORE
VCSS- 30 POINTS

Vs

GRADING OF VENOUS REFLUX
VRS – 3 POINTS

CORRELATION OF CLINICAL SCORING (VCSS, VDS) with VRS (venous reflux scoring)

Clinically all 75 patients were classified as mild, moderate and severe category according to venous clinical severity score (VCSS) to correlate with VRS.

a) Mild (0-9)
b) Moderate (10-20) Vs Venous reflux score (Grade1/2/3)
c) Severe (21 - 30)

Further all the patients were classified according to venous disability score (VDS) into mild, moderate and severe category for correlation with VRS.

a) Mild (1)
b) Moderate (2) Vs Venous reflux score (Grade 1/2/3)
c) Severe (3)

REVIEW OF LITERATURE

Varicose veins[9] are generally identified by their abnormal, dilated, tortuous course on the lower limbs. Varicose veins are a common problem[19]; with widely varying estimates of prevalence .In general, they are found in 10 to 20[9] percent of men and 25 to 33[9] percent of women. Chronic venous disease in the lower extremities has a substantial effect on quality of life[21].

Varicose veins is a common condition affecting the middle aged working people. A scoring system in existence [CEAP][9], is used in very few centres only.

CEAP CLASSIFICATION[9]

- **C**linical severity
- **E**tiology or cause
- **A**natomy
- **P**athophysiology

In the **CEAP**[9] [Clinical, Aetiological, Anatomical, Pathological] **scoring system** the 'C' has been found to be deficient in many respects, so further scores – the **VCSS (Venous Clinical Severity Score)**[9] and **VDS** (**Venous Disability Score**)[9] have been developed and validated as being more accurate, informative and easy to use. There are very few studies **to correlate** the **scores individually** with the **severity of venous reflux by Doppler**.

This study was aimed to correlate **VCSS (venous clinical severity score)** and **VDS(venous disability score) individually** with grading of venous reflux using the **standard colour Doppler** in lower limb varicose veins.

In 2000 Havoc et al.[23] Studied the relationship between lower limb venous symptoms with the venous reflux by duplex ultrasound and concluded that the presence of venous reflux on duplex ultrasound scanning has relationship with few symptoms of lower extremity venous disease.

Passman et al.[24] found global application of VCSS in measuring the varicose vein related risk and changes with the treatment. Along with VCSS, he applied CEAP and CVIQ (chronic venous insufficiency affecting the quality of life).

Vasquez et al.[27] done a study to assess the quality of life changes in varicose vein treatment by venous clinical severity score and found to be useful to measure the changes in the varicose vein treatment.

Volksmann et al[28] studied the change of the venous reflux scoring after varicose vein surgery by duplex ultrasound scan and concluded that the VRS had significantly altered after varicose vein treatment especially after surgery.

Stavros et al[31] validated the three components in the new scoring system i.e VCSS, VDS and VSDS which had a good correlation with anatomic extent of the lower limb venous disease. He advised the new scoring systems to be included in clinical examination for measuring the outcome of the varicose vein surgery.

Wang J et al.[32] done a study at New York as to how well the VCSS is helpful to assess the efficacy of varicose vein treatment by radiofrequency wave ablation and concluded that VCSS was a single scoring system helpful in assessing the efficacy and reasons for failure of treatment.

In 2011 Smith et al.[33] and many authors studied the usefulness of the duplex ultrasound scanning in varicose vein assessment and concluded that duplex scan was the single effective tool for assessing the various parameters in varicose vein.

Edinburgh vein study[34] from Scotland by vascular surgery department in 2002 showed a strong correlation between lower limb clinical features and venous reflux by Doppler ultrasound scanning.

Jessent V et al.[35] studied the clinical usefulness of VSS scoring system and concluded that VCSS and VDS components of VSS were useful tool in clinical practice but VSDS was not much useful in varicose vein assessment.

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Nicholls et al.[36] studied to identify the usefulness of VCSS system in varicose vein risk assessment and to evaluate the changes after varicose vein treatment. The study concluded that VCSS was useful in the above measurement.

In 2006 Miami et al.[37] done a study to compare the parameters between VCSS and CEAP in varicose vein management and concluded that the VCSS was a very good system in diagnosis and follow up of chronic venous insufficiency of lower limbs.

Padberg et al.[38] in 2000 done a study at USA to find out which one was better in varicose vein clinical features assessment and measure the changes after treatment for varicose vein among CEAP and VCSS and found VCSS would be the ideal tool to measure the outcome and risk assessment in varicose vein compared to CEAP which already existed for many years.

So far no studies have done to find out how well individual components of the scoring system correlating with the venous reflux by color Doppler examination method. Present study was undertaken to correlate VCSS (venous clinical severity score) and VDS (venous disability score) individually with grading of VRS (venous reflux score) by using the standard colour Doppler in lower limb varicose veins.

STATISTICAL ANALYSIS

The results were analysed using SPSS (statistical package for the social sciences) Version 17 software with the help of the statistician. The students paired t-test was used to correlate between two scoring system with venous reflux. Categorical variables were analysed using Chi Square test . Values that were not normally distributed or when the mean value was less than two times the standard deviation, were analysed with nonparametric statistical methods. p value <.05 was considered as statistically significant.

GENERAL CHARACTERSTICS OF THE POPULATION

In the present study of 75 patients youngest was 24 and eldest was 75 years (mean 44.01) ± 12.967. Among the 75 patients 34 were below 40 years and remaining 34 were between 40 - 60 years.

AGE DISTRIBUTION

TABLE - 5.1.1

Age Category	Frequency	Percentage
Up to 40 Years	34	45.3 %
41 – 60 Years	34	45.3 %
> 60 Years	7	9.4 %
TOTAL	75	100 %

*FREQUENCY means number patients

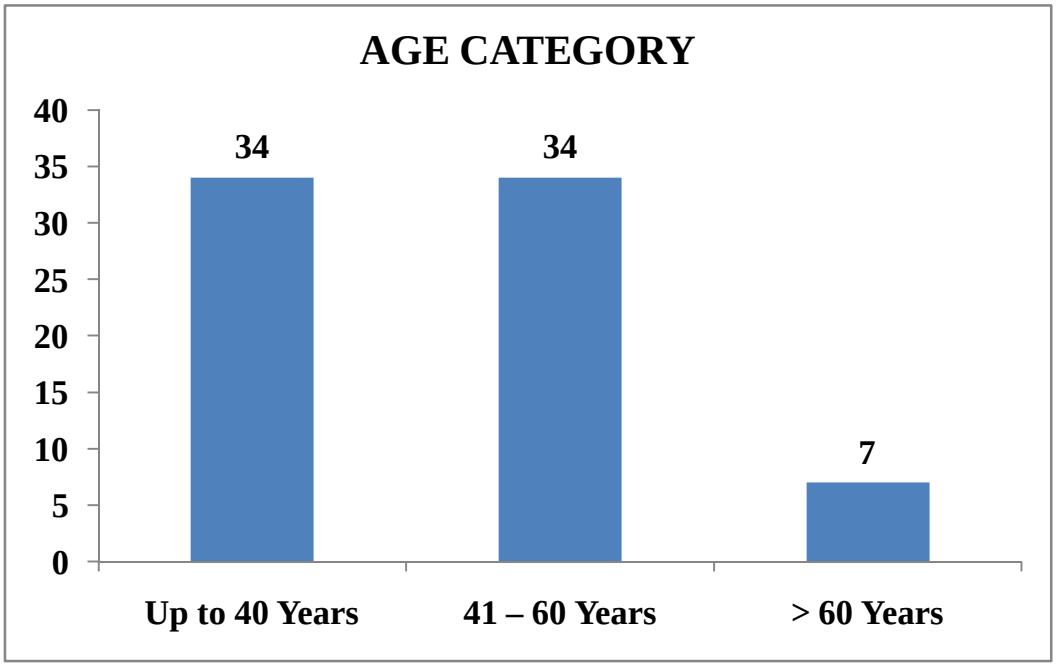

FIGURE - 5.1.1

Showing Age Group Distribution of the Study Population

GENDER DISTRIBUTION

TABLE - 5.1.2

Gender	Frequency	Percentage
MALE	70	93.3 %
FEMALE	5	6.7 %
TOTAL	75	100 %

*FREQUENCY means number patients

Among 75 patients 70 were males and 5 females. M:F ratio :14:1

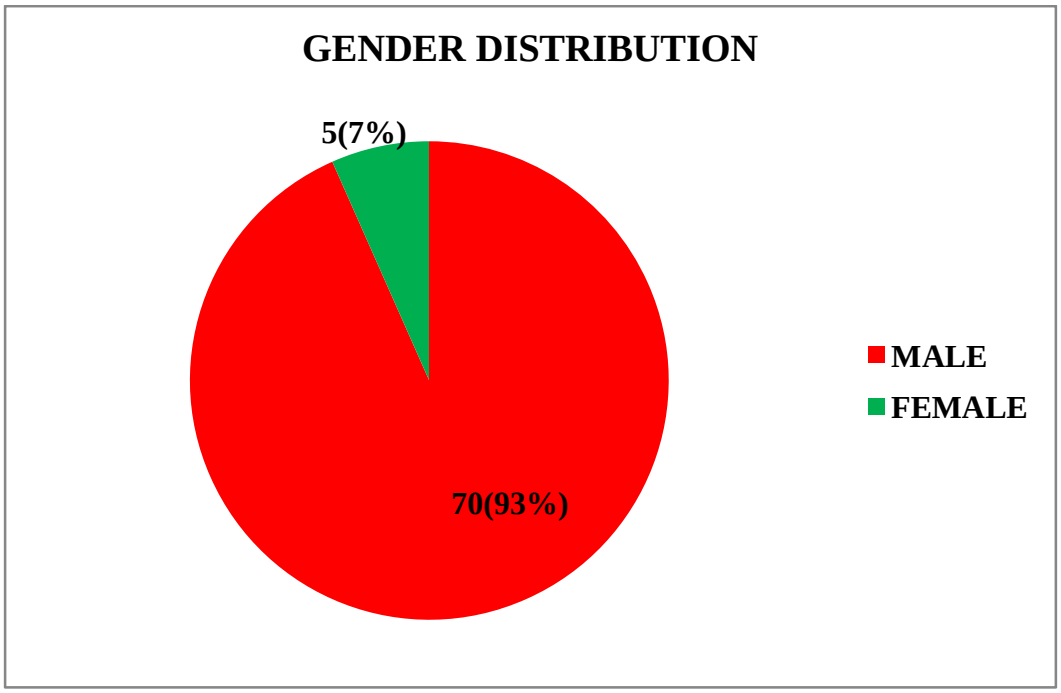

FIGURE - 5.1.2

Showing Gender Distribution of the Study Population

GENDER AND AGE GROUP DISTRIBUTION

TABLE - 5.1.3

Age category	Male	Female	Total
UP TO 40 YRS	32 (45.7%)	2 (40.0%)	34 (45.4%)
41 - 60 YRS	31 (44.3%)	3 (60.0%)	34 (45.4%)
> 60 YRS	7 (10.0%)	0 (0.0%)	7 (9.3%)
TOTAL	70 (100%)	5 (100%)	75 (100%)

The maximum people were below 60 years of age. 10% males were above 60 years.

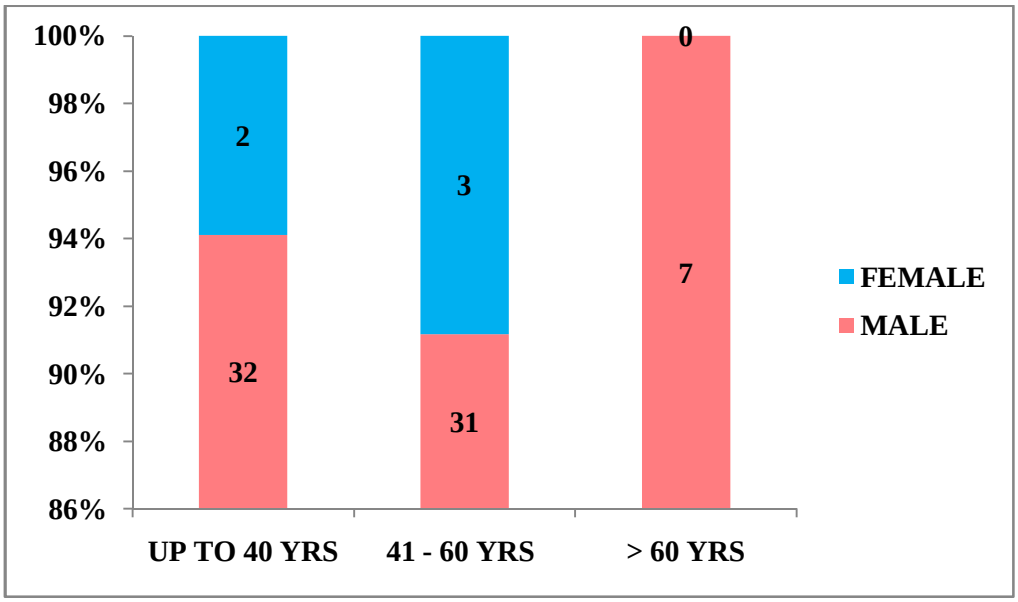

FIGURE - 5.1.3

Showing Age Group and Gender Distribution of the Study Population

SIDE

TABLE - 5.2.1

Side	Frequency	Percentage
Right Side	40	53.3 %
Left Side	35	46.7 %
Total	75	100 %

*FREQUENCY means number patients

Among 75 patients 53.3% patients were presented with right sided where as 46.7% with left sided varicose veins.

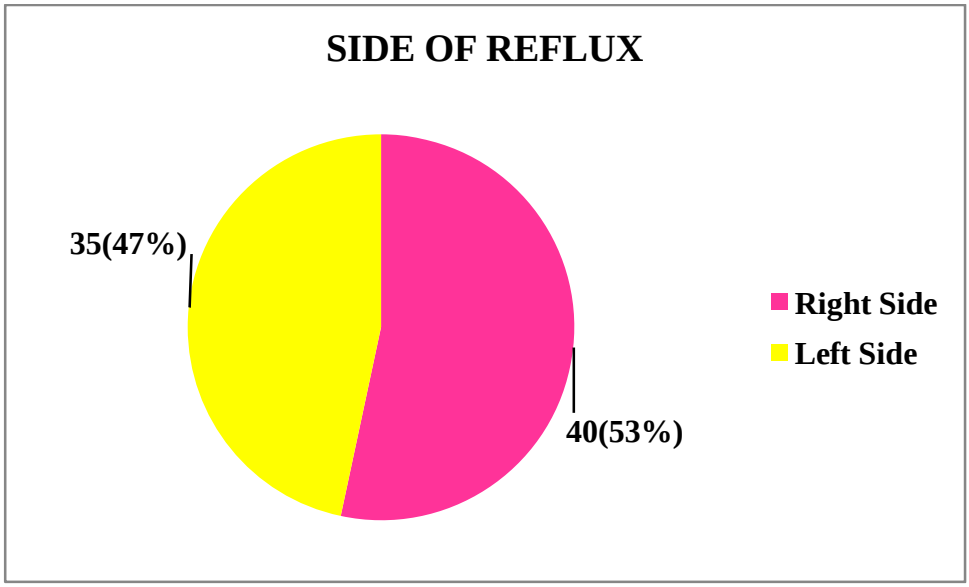

FIGURE - 5.2.1

Showing the Side of the Reflux presentation

5.2: VENOUS CLINICAL SEVERITY SCORE – PARAMETERS TABLES AND CHARTS

PAIN

TABLE - 5.2.1

Pain score	Frequency (No. Of patients)	Percentage
Nil	0	0.0 %
1	30	40.0 %
2	43	57.3 %
3	2	2.7 %
Total	75	100 %

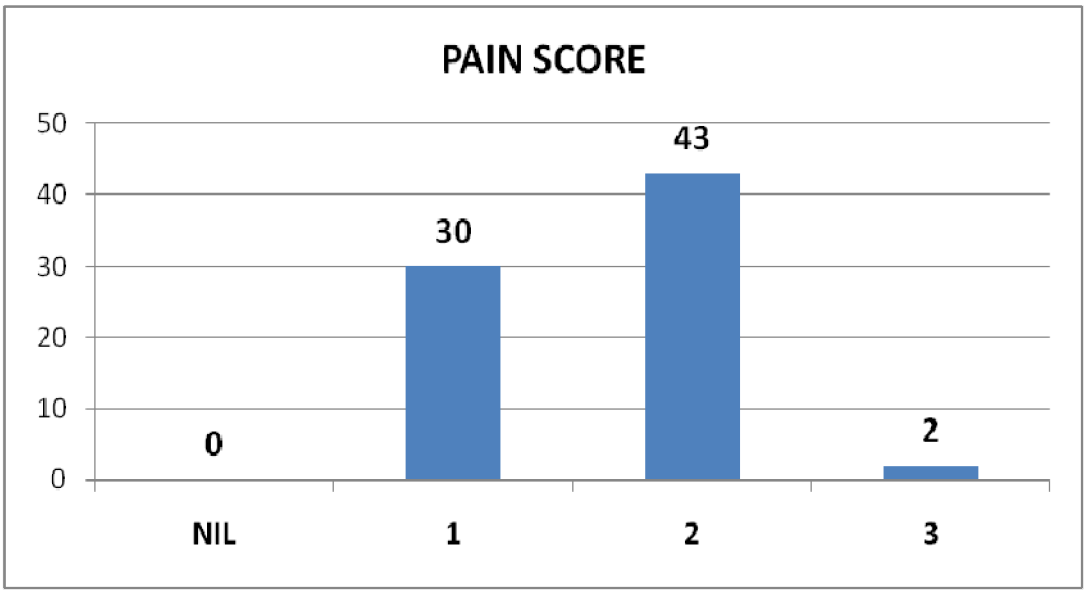

FIGURE - 5.3.1

Showing Pain Scores Distribution

VARICOSITY

TABLE - 5.2.2

Varicosity score	Frequency	Percentage
Nil	0	0.0 %
1	3	4.0 %
2	71	94.7 %
3	1	1.3 %
Total	75	100 %

*FREQUENCY means number patients

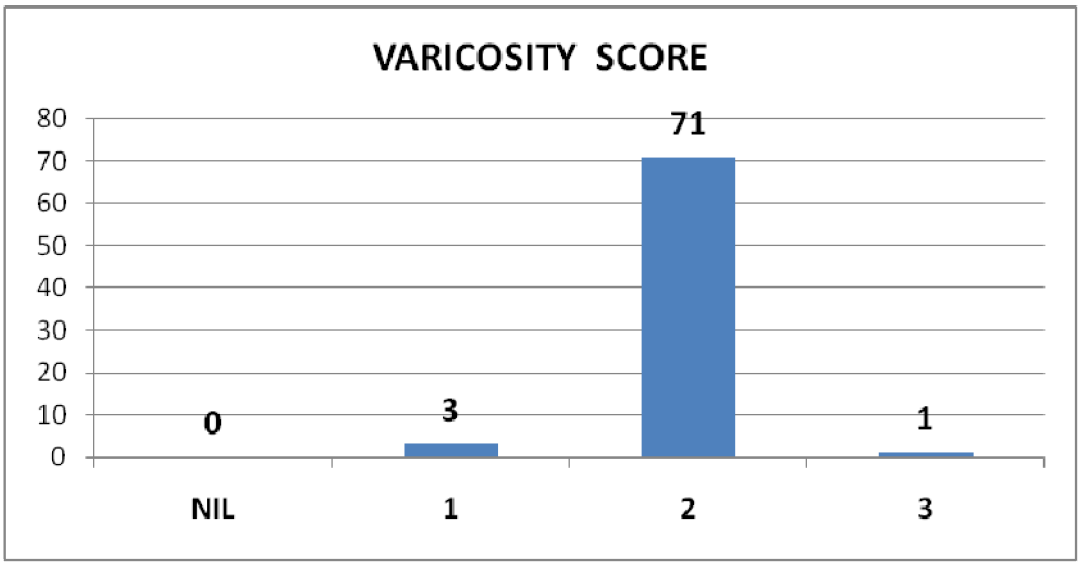

FIGURE - 5.3.2

Showing Varicosity Scores Distribution

EDEMA

TABLE - 5.2.3

Edema score	Frequency	Percentage
Nil	8	10.8 %
2	61	81.3 %
3	4	5.3 %
4	1	1.3 %
5	1	1.3 %
Total	75	100 %

*FREQUENCY means number patients

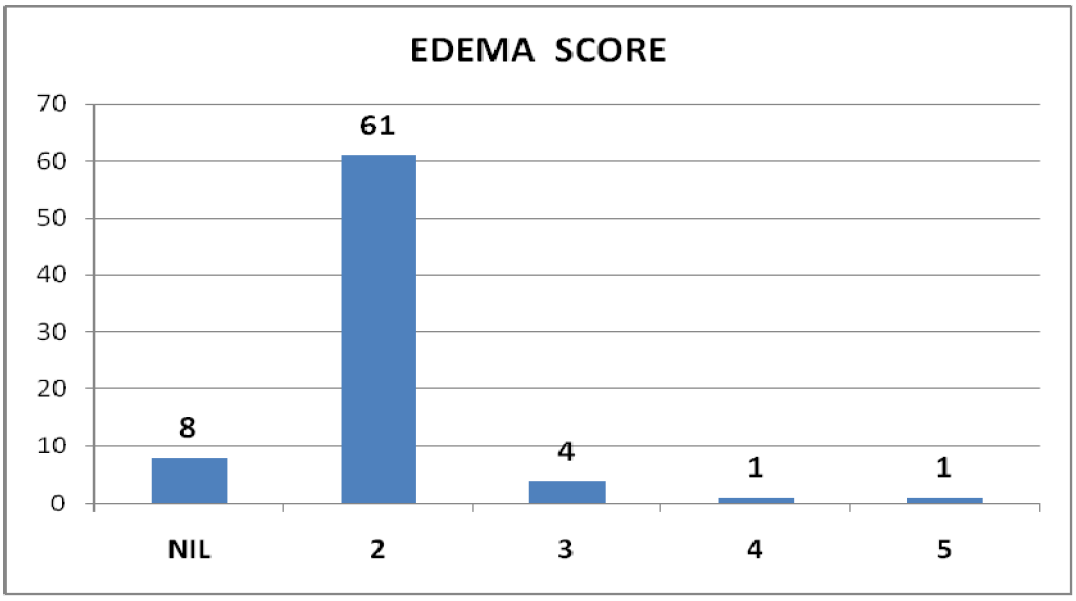

FIGURE - 5.3.3

Showing Edema Scores Distribution

SKIN CHANGES

TABLE - 5.2.4

Skin changes score	Frequency	Percentage
Nil	21	28.0 %
1	2	2.7 %
3	45	60.0 %
4	5	6.6 %
5	2	2.7 %
Total	75	100 %

*FREQUENCY means number patients

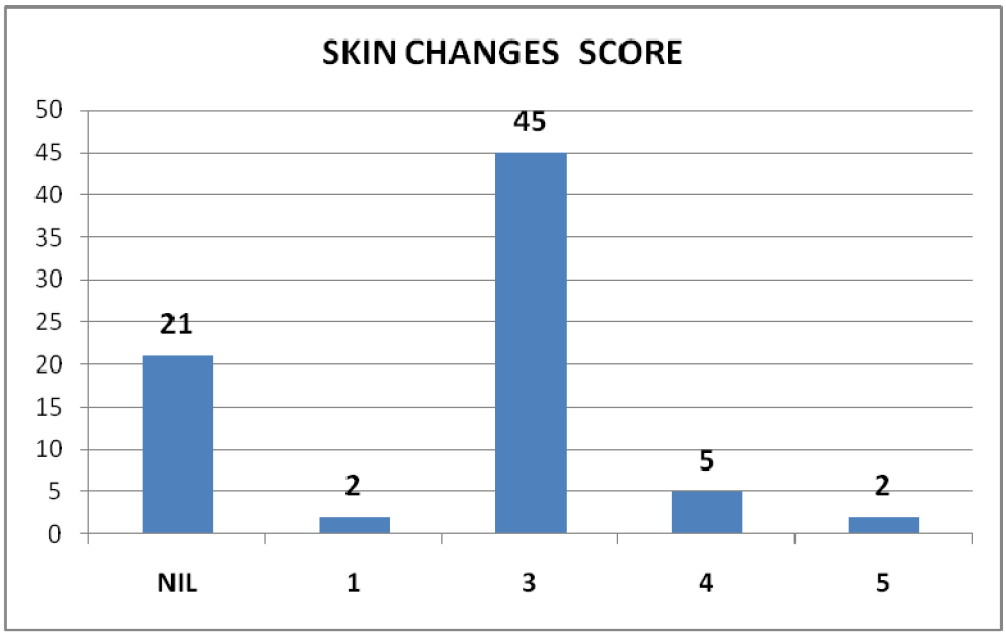

FIGURE - 5.3.4

Showing Skin Changes Scores Distribution

ULCERS

TABLE - 5.2.4

Ulcers score	Frequency	Percentage
Nil	48	64.0 %
3	21	28.0 %
4	6	8.0 %
Total	75	100 %

*FREQUENCY means number patients

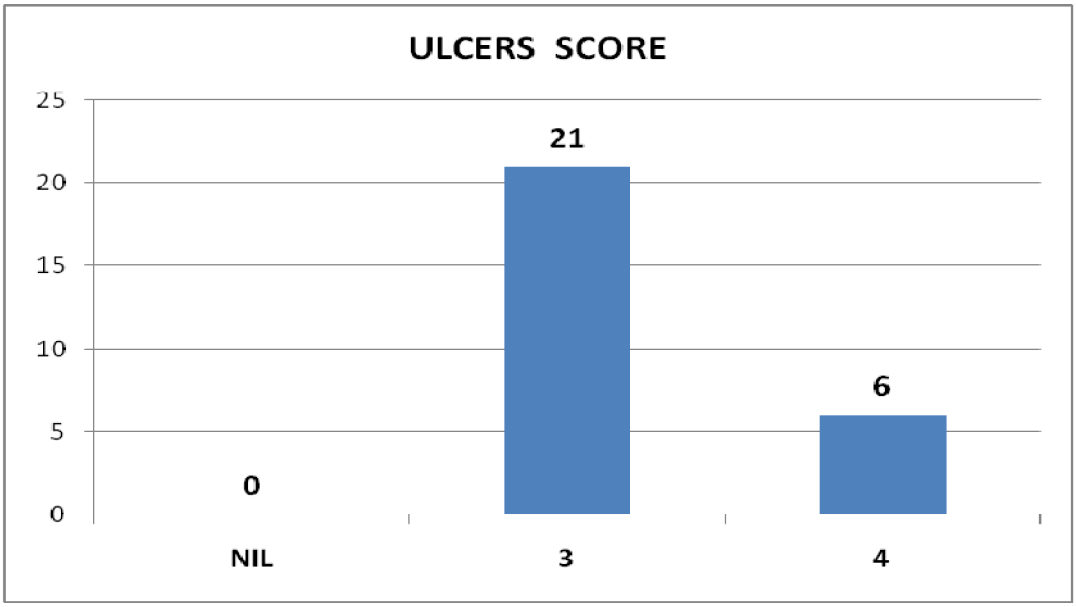

FIGURE - 5.3.5

Showing Ulcers Scores Distribution

In the studied population more than 50(66.67%) patients were under the category of moderate in all the clinical features including pain, varicose vein, edema, skin changes, ulcer.

DESCRIPTIVE STATISTICS

TABLE - 5.2.6

	N	Minimum	Maximum	Mean	Std. Deviation
Age	75	24	75	44.01	12.967
Pain	75	1	3	1.63	.540
Varicosity	75	1	3	1.97	.231
Edema	75	0	5	1.91	.808
Skin changes	75	0	5	2.23	1.494
Ulcers	75	0	4	1.16	1.577
VCSS	75	3	18	8.89	3.237
VDS	75	2	3	2.05	.226
VRS	75	1	3	2.75	.468
Valid n (listwise)	75				

CATEGORY UNDER CLINICAL AND IMAGING SCORES

CATEGORY OF PATIENTS ACCORDING TO VCSS

TABLE - 5.3.1

VCSS Category	Frequency	Percentage
Mild	50	66.7 %
Moderate	25	33.3 %
Severe	0	0.0 %
Total	75	100 %

*FREQUENCY means number patients

Among 75 studied population according to VCSS 50 patients (66.7%) belong to mild and 25 patients (33.3%) were of moderate category. No patients under severe category.

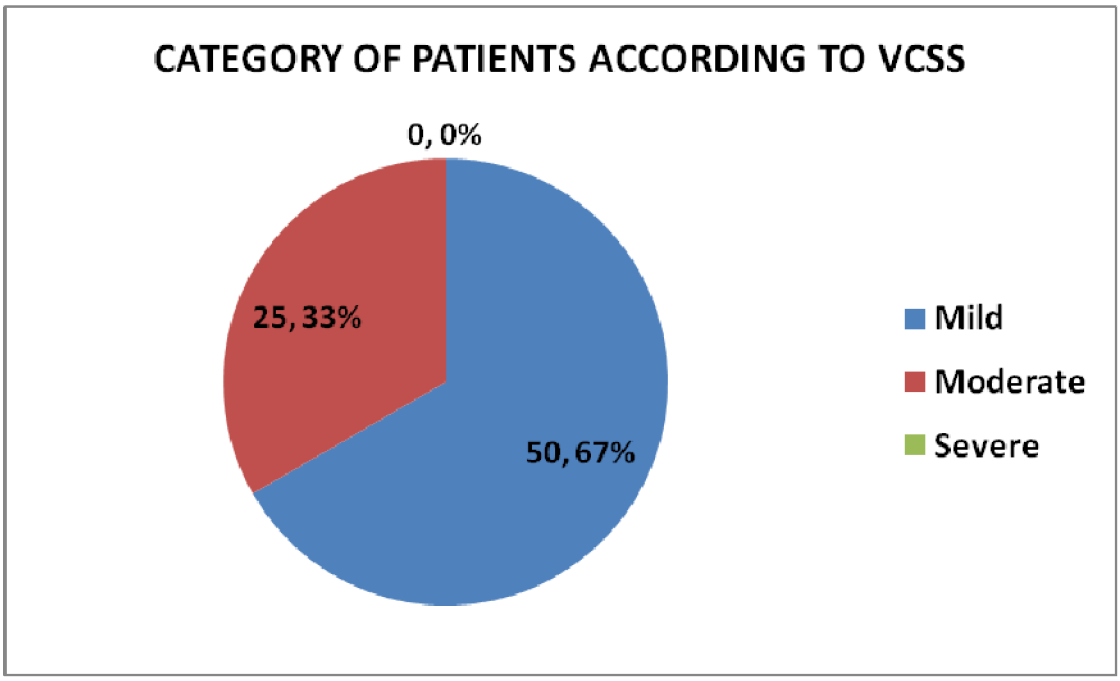

FIGURE - 5.4.1

Showing Category of Patient according to VCSS

CATEGORY OF PATIENTS ACCORDING TO VDS

TABLE - 5.3.2

VDS Category	Frequency	Percentage
0	0	0.0 %
1	0	0.0 %
2	71	94.7 %
3	4	5.3 %
Total	75	100 %

Among the 75 patients according to VDS (venous disability score) 71 patients (94.7 %) belong to the category of grade 2. Only 4 (5.3%) patients belong to grade 3. No patient under grade 1.

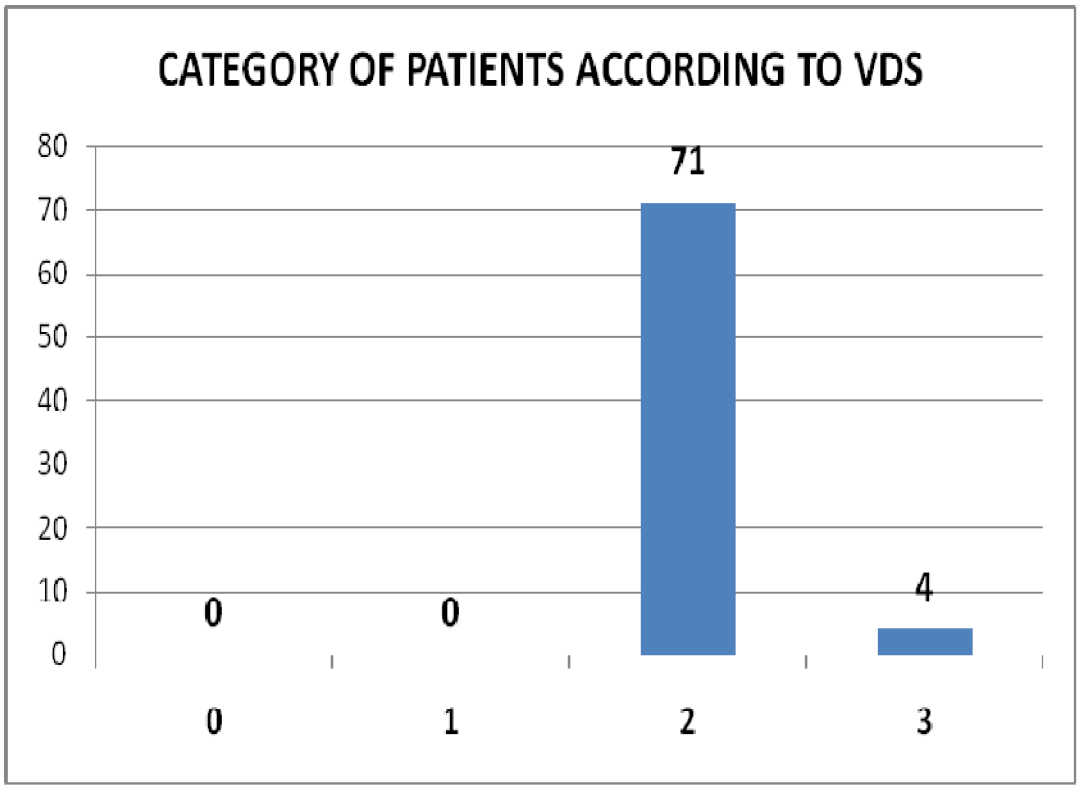

FIGURE - 5.4.2

Showing Category of Patient according to VDS

CATEGORY OF PATIENTS ACCORDING TO VRS

TABLE - 5.3.3

VRS Category	Frequency	Percentage
Mild	1	1.3 %
Moderate	17	22.7 %
Severe	57	76.0 %
Total	75	100 %

*FREQUENCY means number of patients

Among 75 patients 57(76.0%) belong to severe category (grade 3 venous reflux) and 17 (22.7%) patients moderate (grade 2 venous reflux). 1(1.3%) patient with mild reflux.

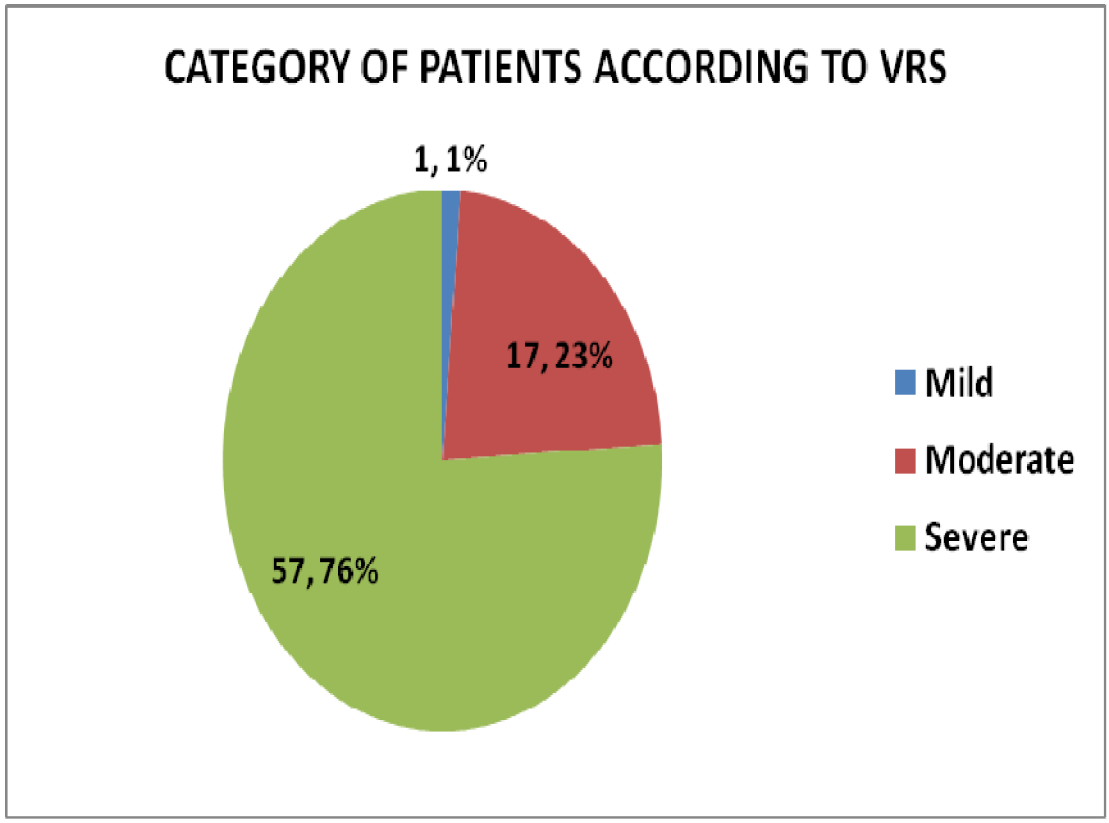

FIGURE - 5.4.3

Showing Category of Patient according to VRS

CATEGORY OF TABLES SHOWING GENDER AND VENOUS REFLUX

Age category	Mild	Moderate	Severe	Total
Male	1 (1.4%)	13 (18.6%)	56 (80.0%)	70 (100%)
Female	0 (0.0%)	4 (80.0%)	1 (20.0%)	5 (100%)
Total	1 (1.3%)	17 (22.7%)	57 (76.0%)	75 (100%)

Chi^2 – 10.051 df -2 p-Value – 0.007 (Statistically Significant)

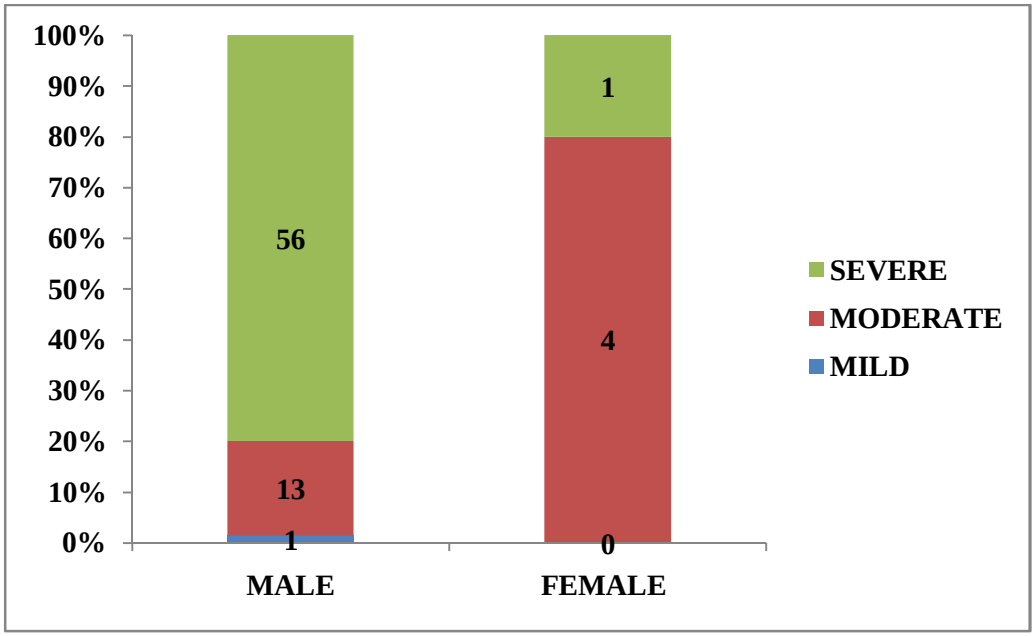

FIGURE - 5.4.4

Showing Gender and Reflux according to VRS category

CATEGORY OF TABLES SHOWING THE CORRELATION BETWEEN VCSS, VDS, VRS WITH AGE, SEX, SIDE

AGE.CAT Vs VCSS.CAT

			VCSS.CAT		Total
			MILD	MODERATE	
AGE CAT	> 60 YEARS	Count	5	2	7
		% within AGE.CAT	71.4%	28.6%	100.0%
		% within VCSS.CAT	10.0%	8.0%	9.3%
	41 - 60 YEARS	Count	19	15	34
		% within AGE.CAT	55.9%	44.1%	100.0%
		% within VCSS.CAT	38.0%	60.0%	45.3%
	UPTO 40 YEARS	Count	26	8	34
		% within AGE.CAT	76.5%	23.5%	100.0%
		% within VCSS.CAT	52.0%	32.0%	45.3%
	Total	Count	50	25	75
		% within AGE.CAT	66.7%	33.3%	100.0%
		% within VCSS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.321[a]	2	.190
Likelihood Ratio	3.339	2	.188
N of Valid Cases	75		

AGE.CAT Vs VDS.CAT

			VDS.CAT		Total
			2	3	
AGE CAT	> 60 YEARS	Count	6	1	7
		% within AGE.CAT	85.7%	14.3%	100.0%
		% within VDS.CAT	8.5%	25.0%	9.3%
	41 - 60 YEARS	Count	32	2	34
		% within AGE.CAT	94.1%	5.9%	100.0%
		% within VDS.CAT	45.1%	50.0%	45.3%
	UPTO 40 YEARS	Count	33	1	34
		% within AGE.CAT	97.1%	2.9%	100.0%
		% within VDS.CAT	46.5%	25.0%	45.3%
	Total	Count	71	4	75
		% within AGE.CAT	94.7%	5.3%	100.0%
		% within VDS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.517[a]	2	.468
Likelihood Ratio	1.255	2	.534
N of Valid Cases	75		

AGE.CAT Vs VRS.CAT

			VRS.CAT			
			MILD	MODERATE	SEVERE	Total
AGE CAT	> 60 YEARS	Count	0	4	3	7
		% within AGE.CAT	.0%	57.1%	42.9%	100.0%
		% within VRS.CAT	.0%	23.5%	5.3%	9.3%
	41 - 60 YEARS	Count	0	7	27	34
		% within AGE.CAT	.0%	20.6%	79.4%	100.0%
		% within VRS.CAT	.0%	41.2%	47.4%	45.3%
	UPTO 40 YEARS	Count	1	6	27	34
		% within AGE.CAT	2.9%	17.6%	79.4%	100.0%
		% within VRS.CAT	100.0%	35.3%	47.4%	45.3%
Total		Count	1	17	57	75
		% within AGE.CAT	1.3%	22.7%	76.0%	100.0%
		% within VRS.CAT	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.435[a]	4	.169
Likelihood Ratio	5.935	4	.204
N of Valid Cases	75		

SEX CAT. Vs VCSS CAT.

			VCSS.CAT		
			MILD	MODERATE	Total
SEX	FEMALE	Count	4	1	5
		% within SEX	80.0%	20.0%	100.0%
		% within VCSS.CAT	8.0%	4.0%	6.7%
	MALE	Count	46	24	70
		% within SEX	65.7%	34.3%	100.0%
		% within VCSS.CAT	92.0%	96.0%	93.3%
Total		Count	50	25	75
		% within SEX	66.7%	33.3%	100.0%
		% within VCSS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.429[a]	1	.513		
Continuity Correction[b]	.027	1	.870		
Likelihood Ratio	.465	1	.495		
Fisher's Exact Test				.659	.456
N of Valid Cases	75				

Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for SEX (FEMALE / MALE)	2.087	.221	19.725
For cohort VCSS.CAT = MILD	1.217	.761	1.947
For cohort VCSS.CAT = MODERATE	.583	.098	3.469
N of Valid Cases	75		

SEX Vs VDS.CAT

			VDS.CAT		
			2	3	Total
SEX	FEMALE	Count	5	0	5
		% within SEX	100.0%	.0%	100.0%
		% within VDS.CAT	7.0%	.0%	6.7%
	MALE	Count	66	4	70
		% within SEX	94.3%	5.7%	100.0%
		% within VDS.CAT	93.0%	100.0%	93.3%
Total		Count	71	4	75
		% within SEX	94.7%	5.3%	100.0%
		% within VDS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.302[a]	1	.583		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.568	1	.451		
Fisher's Exact Test				1.000	.754
N of Valid Cases	75				

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Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
For cohort VDS.CAT = 2	1.061	1.001	1.124
N of Valid Cases	75		

TABLES 5.4 CATEGORY OF CHARTS AND TABLES SHOWING CORRELATION BETWEEN CLINICAL AND IMAGING SCORES

CORRELATION BETWEEN VCSS AND VRS:

TABLES - 5.4.1

VCSS and VRS	Pearson correlation coefficient	p-Value	Sig
N=75	0.285	0.013	Significant*

In the 75 patients there is a significant correlation between VCSS and VRS with a significant p value of 0.013.

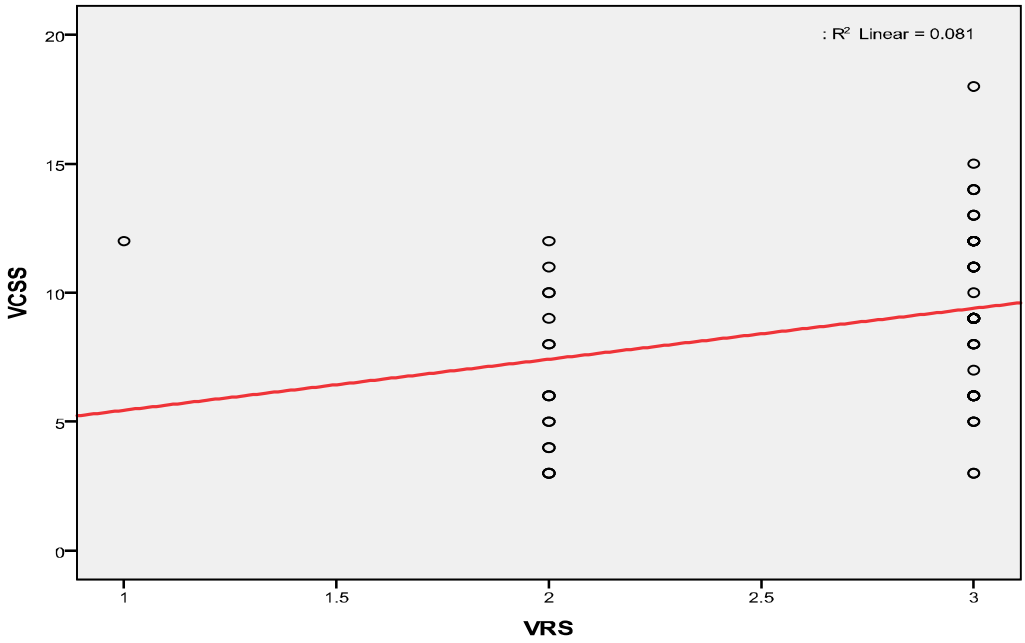

FIGURE - 6.4.1

Scatter Diagram showing Correlation between VCSS and VRS

CORRELATION BETWEEN VDS AND VRS

TABLE - 5.4.2

VDS and VRS	Pearson Correlation Coefficient	p-Value	Sig
N=75	0.129	0.268	NOT SIGNIFICANT

In the studied 75 patients there was no significant correlation between VRS and VDS with insignificant p value 0.268.

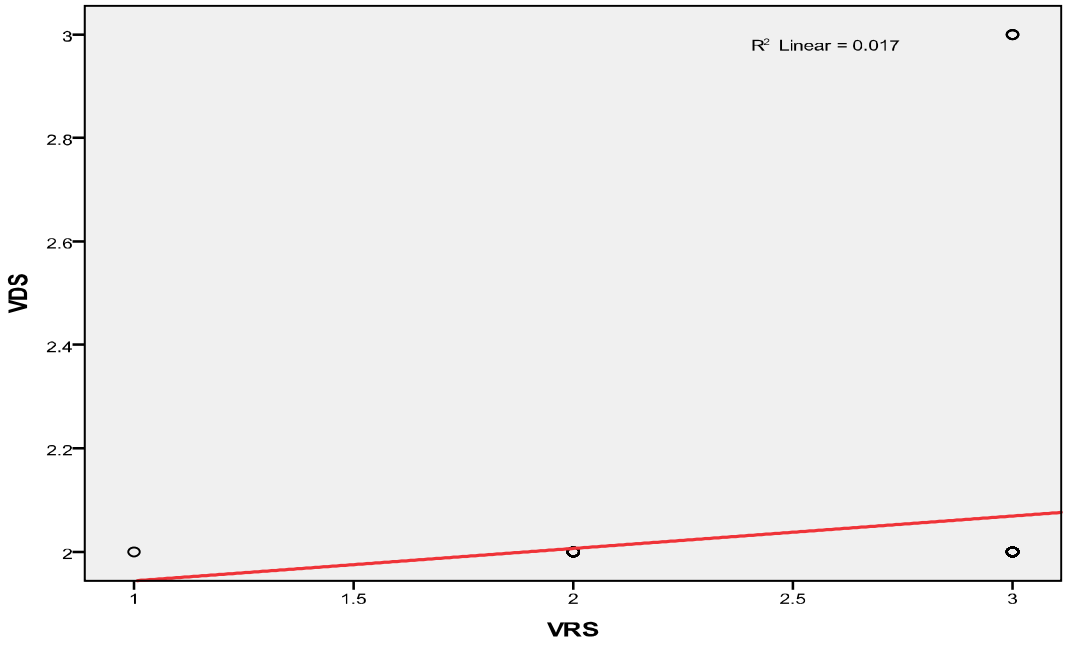

FIGURE - 6.4.2

Scatter Diagram showing Correlation between VDS and VRS

CORRELATION BETWEEN VCSS AND VDS

TABLES - 5.4.3

VCSS and VDS	Pearson correlation coefficient	p-Value	Sig
N=75	0.266	0.021	SIGNIFICANT*

From the above analysis there is a significant correlation between VCSS and VRS with the significant p value 0.021.

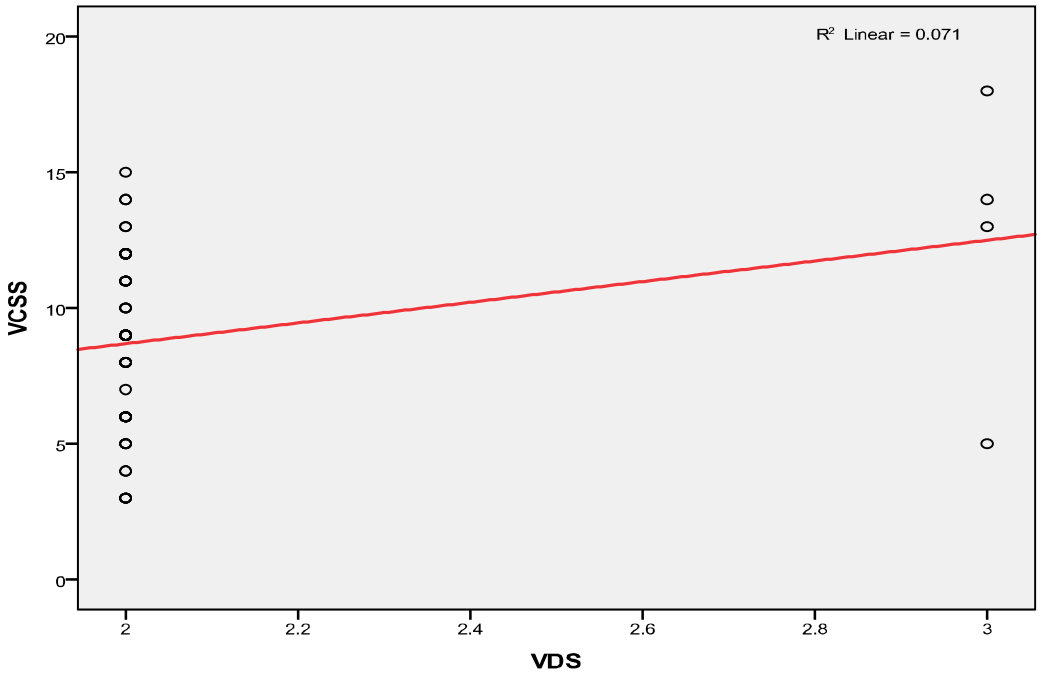

FIGURE - 6.4.3

Scatter Diagram showing Correlation between VCSS and VDS

CATEGORY OF CROSS

TABLES - 5.5

VCSS.CAT Vs VRS.CAT Cross tabulation

			VRS.CAT			Total
			MILD	MODERATE	SEVERE	
VCSS.CAT	MILD	Count	0	15	35	50
		% within VCSS.CAT	.0%	30.0%	70.0%	100.0%
		% within VRS.CAT	.0%	88.2%	61.4%	66.7%
	MODERATE	Count	1	2	22	25
		% within VCSS.CAT	4.0%	8.0%	88.0%	100.0%
		% within VRS.CAT	100.0%	11.8%	38.6%	33.3%
	Total	Count	1	17	57	75
		% within VCSS.CAT	1.3%	22.7%	76.0%	100.0%
		% within VRS.CAT	100.0%	100.0%	100.0%	100.0%

VDS.CAT VS VRS.CAT Cross tabulation

			VRS.CAT			Total
			MILD	MODERATE	SEVERE	
VDS.CAT	2	Count	1	17	53	71
		% within VDS.CAT	1.4%	23.9%	74.6%	100.0%
		% within VRS.CAT	100.0%	100.0%	93.0%	94.7%
	3	Count	0	0	4	4
		% within VDS.CAT	.0%	.0%	100.0%	100.0%
		% within VRS.CAT	.0%	.0%	7.0%	5.3%
Total		Count	1	17	57	75
		% within VDS.CAT	1.3%	22.7%	76.0%	100.0%
		% within VRS.CAT	100.0%	100.0%	100.0%	100.0%

VCSS.CAT Vs VDS.CAT Cross tabulation

			VDS.CAT		Total
			2	3	
VCSS.CAT	MILD	Count	49	1	50
		% within VCSS.CAT	98.0%	2.0%	100.0%
		% within VDS.CAT	69.0%	25.0%	66.7%
	MODERATE	Count	22	3	25
		% within VCSS.CAT	88.0%	12.0%	100.0%
		% within VDS.CAT	31.0%	75.0%	33.3%
Total		Count	71	4	75
		% within VCSS.CAT	94.7%	5.3%	100.0%
		% within VDS.CAT	100.0%	100.0%	100.0%

SEX * VCSS.CAT

Crosstab

			VCSS.CAT		
			MILD	MODERATE	Total
SEX	FEMALE	Count	4	1	5
		% within SEX	80.0%	20.0%	100.0%
		% within VCSS.CAT	8.0%	4.0%	6.7%
	MALE	Count	46	24	70
		% within SEX	65.7%	34.3%	100.0%
		% within VCSS.CAT	92.0%	96.0%	93.3%
Total		Count	50	25	75
		% within SEX	66.7%	33.3%	100.0%
		% within VCSS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.429[a]	1	.513		
Continuity Correction[b]	.027	1	.870		
Likelihood Ratio	.465	1	.495		
Fisher's Exact Test				.659	.456
N of Valid Cases	75				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.67.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.429[a]	1	.513		
Continuity Correction[b]	.027	1	.870		
Likelihood Ratio	.465	1	.495		
Fisher's Exact Test				.659	.456
N of Valid Cases	75				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.67.

b. Computed only for a 2x2 table

Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for SEX (FEMALE / MALE)	2.087	.221	19.725
For cohort VCSS.CAT = MILD	1.217	.761	1.947
For cohort VCSS.CAT = MODERATE	.583	.098	3.469
N of Valid Cases	75		

SEX * VDS.CAT

Crosstab

			VDS.CAT		Total
			2	3	
SEX	FEMALE	Count	5	0	5
		% within SEX	100.0%	.0%	100.0%
		% within VDS.CAT	7.0%	.0%	6.7%
	MALE	Count	66	4	70
		% within SEX	94.3%	5.7%	100.0%
		% within VDS.CAT	93.0%	100.0%	93.3%
	Total	Count	71	4	75
		% within SEX	94.7%	5.3%	100.0%
		% within VDS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.302[a]	1	.583		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.568	1	.451		
Fisher's Exact Test				1.000	.754
N of Valid Cases	75				

a. 3 cells (75.0%) have expected count less than 5. The minimum expected count is .27.

b. Computed only for a 2x2 table

Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
For cohort VDS.CAT = 2	1.061	1.001	1.124
N of Valid Cases	75		

SEX * VRS.CAT

Crosstab

			VRS.CAT			Total
			Mild	Moderate	Severe	
SEX	FEMALE	Count	0	4	1	5
		% within SEX	.0%	80.0%	20.0%	100.0%
		% within VRS.CAT	.0%	23.5%	1.8%	6.7%
	MALE	Count	1	13	56	70
		% within SEX	1.4%	18.6%	80.0%	100.0%
		% within VRS.CAT	100.0%	76.5%	98.2%	93.3%
	Total	Count	1	17	57	75
		% within SEX	1.3%	22.7%	76.0%	100.0%
		% within VRS.CAT	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.051[a]	2	.007
Likelihood Ratio	8.121	2	.017
N of Valid Cases	75		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .07.

Risk Estimate

	Value
Odds Ratio for SEX (FEMALE / MALE)	[a]

a. Risk Estimate statistics cannot be computed. They are only computed for a 2*2 table without empty cells.

SIDE * VCSS.CAT

Crosstab

			VCSS.CAT		
			MILD	MODERATE	Total
SIDE	LEFT	Count	22	13	35
		% within SIDE	62.9%	37.1%	100.0%
		% within VCSS.CAT	44.0%	52.0%	46.7%
	RIGHT	Count	28	12	40
		% within SIDE	70.0%	30.0%	100.0%
		% within VCSS.CAT	56.0%	48.0%	53.3%
Total		Count	50	25	75
		% within SIDE	66.7%	33.3%	100.0%
		% within VCSS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.429[a]	1	.513		
Continuity Correction[b]	.167	1	.682		
Likelihood Ratio	.428	1	.513		
Fisher's Exact Test				.625	.341
N of Valid Cases	75				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.67.

b. Computed only for a 2x2 table

Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for SIDE (LEFT / RIGHT)	.725	.277	1.900
For cohort VCSS.CAT = MILD	.898	.648	1.244
For cohort VCSS.CAT = MODERATE	1.238	.653	2.348
N of Valid Cases	75		

SIDE * VDS.CAT

Crosstab

			VDS.CAT		Total
			2	3	
SIDE	LEFT	Count	34	1	35
		% within SIDE	97.1%	2.9%	100.0%
		% within VDS.CAT	47.9%	25.0%	46.7%
	RIGHT	Count	37	3	40
		% within SIDE	92.5%	7.5%	100.0%
		% within VDS.CAT	52.1%	75.0%	53.3%
Total		Count	71	4	75
		% within SIDE	94.7%	5.3%	100.0%
		% within VDS.CAT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.797[a]	1	.372		
Continuity Correction[b]	.143	1	.706		
Likelihood Ratio	.840	1	.359		
Fisher's Exact Test				.618	.360
N of Valid Cases	75				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.87.

b. Computed only for a 2x2 table

Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for SIDE (LEFT / RIGHT)	2.757	.273	27.789
For cohort VDS.CAT = 2	1.050	.946	1.166
For cohort VDS.CAT = 3	.381	.041	3.498
N of Valid Cases	75		

SIDE * VRS.CAT

Crosstab

			VRS.CAT			
			MILD	MODERATE	SEVERE	Total
SIDE	LEFT	Count	0	10	25	35
		% within SIDE	.0%	28.6%	71.4%	100.0%
		% within VRS.CAT	.0%	58.8%	43.9%	46.7%
	RIGHT	Count	1	7	32	40
		% within SIDE	2.5%	17.5%	80.0%	100.0%
		% within VRS.CAT	100.0%	41.2%	56.1%	53.3%
Total		Count	1	17	57	75
		% within SIDE	1.3%	22.7%	76.0%	100.0%
		% within VRS.CAT	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.065[a]	2	.356
Likelihood Ratio	2.447	2	.294
N of Valid Cases	75		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .47.

DISCUSSION

This study was designed to assess the correlation between **VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING(VRS) BY VENOUS DOPPLER** in Varicose veins of lower limbs. Seventy five patients between 24 to 75yrs were recruited in this study which was conducted over a period of 18 months. A detailed history and clinical examination along with Doppler imaging was done. The information thus collected was documented in a pre structured proforma.

Among the 75 patients 70(93.3 %) were males and 5(6.7%) females. In both the sexes right lower limb was found to be predominantly affected.

On analyzing the Venous clinical severity score(VCSS) of the75 patients, a minimum pain score of1 was seen in 40.0% of the cases under study and a maximum of 3 in 2.7% (mean 1.63 ± 0.540). Four percent of the cases had a varicosity score of 1 and 1.3% had a score of 3 (mean 1.97 ± 0.231). There was no edema in 10.8% of the cases whereas a maximum score of 5 was seen in 1.3% (mean 1.91 ± 0.808). Twenty

eight percent of the cases had no skin changes whereas 2.7 % cases had a maximum score of 5 (mean 2.23 ± 1.494). sixty four percent of the patients did not have any ulcers and 8% of them had a maximum score of 4 (mean 1.16 ± 1.577). On categorizing our patients as per the VCSS system, we found that 66.7% (n=50) fell into mild and 33.3% (n=25) into moderate category, whereas none came under the severe group. Hence as per VCSS 66.7% cases had mild disease.

On analyzing the Venous disability score (VDS) of the75 patients, it was found that majority of them had Grade II disability (n=71) (94.7%), only 5.3% (n=4) of them had Grade III disability and none had grade I VDS. Hence as per VDS system 94.7% (n=71) of the patients had grade II disability.

On analyzing the Venous reflux score grades among the 75 patients, a significant proportion of them (n=57, 76%) had grade 3 reflux and grade 1 and 2 reflux was seen in only 1.3% (n=1) and 22.7% (n=17), respectively. Hence in our study 76 .0%(n=57) patients had severe grade of venous reflux (VRS).

After analyzing the results of individual scoring system, it was looked for correlation between each of the scoring systems and found that

there was a statistically significant correlation between VCSS and VRS (N=75, Pearson correlation coefficient =0.285, P value =0.013). There was no correlation between VDS and VRS (Pearson correlation coefficient =0.129, P value =0.268). It was also found that the clinical features assessed as per VCSS correlated well with the disability caused by varicose veins in lower limbs, assessed using the VDS. This observation was statistically significant (Pearson correlation coefficient =0.266, P value- 0.021).

In 2000 Havoc et al.[23] Studied the relationship between lower limb venous symptoms with the venous reflux by duplex ultrasound in 1900 patients and concluded that the presence of venous reflux on duplex ultrasound scanning has relationship with few symptoms of lower extremity venous disease.(p value <0.07).

Passman et al[24] found global application of VCSS in measuring the varicose vein related risk and changes with the treatment in 45 patients. Along with VCSS, he applied CEAP and CVIQ (chronic venous insufficiency affecting quality of life).

Vasquez et al. [27]done a study to assess the quality of life changes in varicose vein treatment in 499 patients by venous clinical severity

score and found to be useful (p value ;0.002) to measure the changes in the varicose vein treatment.

Stavros et al. [31] validated the three components in the new scoring system i.e VCSS, VDS and VSDS which had a good correlation with anatomic extent of the lower limb venous disease. He advised the new scoring systems to be included in clinical examination for measuring the outcome of the varicose vein surgery. (n = 45 patients, p value : 0.001(VCSS), p value :0.002 (VDS)

Wang J et al.[32] done a study at New York as to how well the VCSS is helpful to assess the efficacy of varicose vein treatment by radiofrequency wave ablation and concluded that VCSS was a single scoring system helpful in assessing the efficacy and reasons for failure of treatment. (n= 1460 patients, p value :0.025).

Edinburgh vein study[34] from Scotland by vascular surgery department in 2002 showed a strong correlation between lower limb clinical features and venous reflux by Doppler ultrasound scanning. (n=466 patients, p value : 0.012).

Nicholls et al.[36] studied to identify the usefulness of VCSS system in varicose vein risk assessment and to evaluate the changes after

varicose vein treatment in 68 patients. The study concluded that VCSS was useful(p value :0.015) in the above measurement.

In 2006 Miami et al.[37] done a study include 2894 patients to compare the parameters between VCSS and CEAP in varicose vein management and concluded that the VCSS was a very good system(p value:0.001) in diagnosis and follow up of chronic venous insufficiency of lower limbs.

Padberg et al. [38] in 2000 done a study in 191 patients to find out which one was better in varicose vein clinical features assessment and measure the changes after treatment for varicose vein among CEAP and VCSS and found VCSS would be the ideal tool(p value : 0.001) to measure the outcome and risk assessment in varicose vein compared to CEAP which already existed for many years.

SUMMARY

The study was aimed at studying the correlation between **VENOUS CLINICAL SEVERITY SCORE (VCSS), VENOUS DISABILITY SCORE (VDS) AND VENOUS REFLUX GRADING BY VENOUS DOPPLER** in Varicose veins of lower limbs.

This study was conducted in the Department of General surgery, ESI-PGIMSR, over a period of 18months. The study group consisted of 75 patients between 24 to 75yrs (mean 44.41 ± 12.967), inclusive of both males (n=70) and females (n=5). They were assessed for severity of varicose veins by documenting a detailed history, clinical examination findings and imaging studies on a pre structured proforma.

It was found that majority of the patients were ≤ 60yrs and the right lower limb was predominantly affected in both sexes.

Using the VCSS system, 66.7% (n=50) cases had mild disease, 33.3% (n=25) cases had moderate disease and none had severe disease.

In the present study, as per the VDS system, majority of the patients (n=71, 94.7%) had grade II disability. And 76% (n=57) of the

patients had severe grade of venous reflux i.e. venous reflux duration >1second.

A statistically significant correlation was found between clinical manifestations of varicose veins and the degree of reflux in the veins, assessed using the VCSS and VRS system, respectively.

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CONCLUSION

Seventy five cases of primary varicose veins of the lower limb have been studied in a prospective manner strictly abiding to the objectives, inclusion and exclusion criteria. An analysis of the data has enabled us to arrive at the following conclusions.

1. Varicose vein clinical features including pain, varicosity, oedema, skin changes and ulcer significantly correlates with the venous reflux at SFJ.

2. Varicose vein develops as a result of venous reflux and the same is responsible for the clinical features and its complications. Intervention in Grade II and III venous reflux in asymptomatic patients can be the ideal treatment to prevent complications.

3. The VCSS and VRS have a significant role as compared to VDS in planning the better modality of treatment to prevent disease related morbidity and its complications.

4. VCSS- venous clinical severity score is easily applicable to all patients as a bed side score compare to traditional scoring systems.

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S.NO	NAME	AGE	SEX	SIDE	PAIN SCORE	VARICOSITY SCORE	EDEMA SCORE	SKIN.CHANGES SCORE	ULCERS SCORE	VCSS	VDS	VRS
1	Sivakumar	32	MALE	RIGHT	2	2	2	3	0	9	2	3
2	Balasubramani	47	MALE	LEFT	2	2	2	3	3	12	2	3
3	Balamurugan	30	MALE	LEFT	2	2	2	3	0	9	2	3
4	Murugadoss kumar	24	MALE	LEFT	2	2	2	3	0	9	2	3
5	Saravanan	34	MALE	RIGHT	2	2	2	3	0	9	2	3
6	Gopal	43	MALE	LEFT	2	2	2	3	0	9	2	3
7	Noor bhimbagadur	58	MALE	RIGHT	2	2	2	4	0	10	2	3
8	Purusthoman	36	MALE	RIGHT	1	2	2	3	3	11	2	3
9	Hemaraj	65	MALE	RIGHT	2	2	2	0	0	6	2	2
10	Pradeep	38	MALE	RIGHT	2	2	2	3	0	9	2	3
11	Raghuraman	41	MALE	LEFT	1	2	2	3	0	8	2	2
12	Sivakumaran	38	MALE	RIGHT	2	2	2	0	0	6	2	3
13	Hariraman	60	MALE	RIGHT	2	2	2	4	3	13	2	3
14	Srinath	36	MALE	LEFT	2	2	2	3	0	9	2	3
15	Kalidass	40	MALE	LEFT	2	2	2	0	0	6	2	2
16	Ravichandran	49	MALE	RIGHT	1	2	2	3	3	11	2	3
17	Muralidharan	37	MALE	LEFT	2	2	2	3	0	9	2	3
18	Damodharan	54	MALE	LEFT	2	2	2	3	3	12	2	3
19	Innasiraja	29	MALE	LEFT	2	2	2	3	0	9	2	3
20	Selvaraj	46	MALE	LEFT	1	2	2	5	4	14	2	3
21	Sri Rengarajan	43	MALE	RIGHT	2	2	2	3	0	9	2	3
22	Arul selvaraj	46	MALE	LEFT	2	2	2	3	3	12	2	3
23	Gopikrishnan	27	MALE	RIGHT	2	2	2	3	3	12	2	3
24	Shunmugam	46	MALE	LEFT	2	2	2	5	0	11	2	3
25	Narasimman rao	40	MALE	RIGHT	2	2	2	3	3	12	2	3

S.NO	NAME	AGE	SEX	SIDE	PAIN SCORE	VARICOSITY SCORE	EDEMA SCORE	SKIN.CHANGES SCORE	ULCERS SCORE	VCSS	VDS	VRS
26	Joseph raj	53	MALE	RIGHT	2	2	2	3	3	12	2	3
27	Viswanathan	43	MALE	LEFT	2	2	2	3	0	9	2	3
28	Mahendran	75	MALE	RIGHT	2	2	3	3	0	10	2	2
29	Vinayagamoorthy	55	MALE	RIGHT	2	2	2	3	0	9	2	3
30	Thangapandi	35	MALE	LEFT	2	2	2	3	0	9	2	3
31	Mani	30	MALE	RIGHT	2	2	2	3	0	9	2	3
32	Prabhu	26	MALE	RIGHT	1	2	3	3	0	9	2	3
33	Pradeep	36	MALE	LEFT	2	2	2	4	4	14	2	3
34	Balaraman	65	MALE	RIGHT	2	2	2	0	0	6	2	2
35	Bhim bahadur	58	MALE	RIGHT	1	2	2	3	0	8	2	3
36	Purusothaman	31	MALE	RIGHT	1	2	2	3	0	8	2	3
37	Gunasekaran	59	MALE	LEFT	2	2	2	0	0	6	2	3
38	Boobalan	24	MALE	RIGHT	1	2	2	3	0	8	2	3
39	Ramanathan	59	MALE	LEFT	2	2	2	0	0	6	2	3
40	Narayanan sharma	31	MALE	RIGHT	2	2	2	3	3	12	2	1
41	Gopi	27	MALE	RIGHT	1	2	2	0	0	5	2	2
42	Saravanan	33	MALE	RIGHT	2	2	2	3	0	9	2	3
43	Viswanathan	43	MALE	LEFT	2	2	2	3	3	12	2	3
44	Sureshkumarrout	24	MALE	RIGHT	2	2	2	0	0	6	2	3
45	Dakshnamoorthy	55	MALE	LEFT	2	2	2	3	3	12	2	3
46	Muthukumar	32	MALE	LEFT	1	2	2	3	3	11	2	2
47	Murugan	30	MALE	LEFT	2	2	2	0	0	6	2	3
48	Saravanan	32	MALE	RIGHT	1	2	2	3	0	8	2	3
49	kalaiarasi	30	FEMALE	LEFT	1	2	0	0	0	3	2	2
50	Vajravel	65	MALE	RIGHT	1	2	2	0	0	5	2	3

S.NO	NAME	AGE	SEX	SIDE	PAIN SCORE	VARICOSITY SCORE	EDEMA SCORE	SKIN.CHANGES SCORE	ULCERS SCORE	VCSS	VDS	VRS
51	Abdul Azeez	51	MALE	RIGHT	1	2	0	0	0	3	2	2
52	Vasanthakumari	55	FEMALE	RIGHT	1	2	0	0	0	3	2	2
53	John	38	MALE	RIGHT	1	2	3	1	0	7	2	3
54	Nagaimuthu	56	FEMALE	LEFT	2	2	0	0	0	4	2	2
55	Anandhan	60	MALE	RIGHT	2	2	2	3	4	13	2	3
56	Thiru gnanm	40	MALE	LEFT	1	2	2	1	0	6	2	3
57	kumar	33	MALE	LEFT	1	2	2	0	0	5	2	3
58	Paranthaman	48	MALE	LEFT	1	2	2	3	3	11	2	3
59	Anusya	49	FEMALE	LEFT	1	2	2	3	3	11	2	3
60	Paneerselvam	48	MALE	LEFT	1	1	2	3	3	10	2	2
61	Kumar	33	MALE	RIGHT	1	2	0	0	0	3	2	3
62	Gopal	43	MALE	LEFT	1	2	2	3	0	8	2	2
63	Ranganathan	63	MALE	LEFT	1	2	2	0	0	5	2	2
64	Murugadoss	24	MALE	LEFT	2	2	2	3	3	12	2	2
65	Balaji	39	MALE	RIGHT	2	2	4	3	3	14	3	3
66	Raghu	49	MALE	LEFT	1	1	0	3	4	9	2	2
67	Sureshkumar	41	MALE	RIGHT	2	2	2	4	3	13	3	3
68	Mary	35	FEMALE	RIGHT	1	1	2	0	0	4	2	2
69	Selvaraj	50	MALE	LEFT	1	2	2	0	0	5	3	3
70	Ranganathan	73	MALE	RIGHT	3	2	5	4	4	18	3	3
71	Anandhan	59	MALE	RIGHT	1	2	0	0	3	6	2	3
72	Mahadevan	75	MALE	RIGHT	2	2	2	3	3	12	2	3
73	Yusuf kani	43	MALE	RIGHT	1	2	0	0	0	3	2	3
74	Vinayagamoorthy	54	MALE	RIGHT	1	2	3	3	0	9	2	3
75	Joseph	52	MALE	LEFT	3	3	2	3	4	15	2	3